

# **California Water Service Company**

## **2010 Urban Water Management Plan**

### **East Los Angeles District**

**ADOPTED**



**June 2011**



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**California Water Service Company  
2010 Urban Water Management Plan  
Contact Sheet**

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Montebello, CA 90640**

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District Phone: **(323) 722-8601**  
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## 1 Plan Preparation

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California Water Service Company (Cal Water) is an investor-owned public utility supplying water service to 1.7 million Californians through 435,000 connections. Its 24 separate water systems serve 63 communities from Chico in the North to the Palos Verdes Peninsula in Southern California. California Water Service Group, Cal Water's parent company, is also serving communities in Washington, New Mexico, and Hawaii. Rates and operations for districts located in California are regulated by the California Public Utilities Commission (CPUC). Rates are set separately for each of the systems. Cal Water incorporated in 1926 and has provided water service to the East Los Angeles community since 1928.

### 1.1 Purpose

California Water Code §10644(a) requires urban water suppliers to file with the Department of Water Resources, the California State Library, and any city or county within which the supplier provides water supplies, a copy of its Urban Water Management Plan (UWMP), no later than 30 days after adoption. All urban water suppliers as defined in Section 10617 (including wholesalers), either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet annually are required to prepare an UWMP.

This UWMP is a foundation document and source of information for a Water Supply Assessment and a Written Verification of Water Supply. An UWMP also serves as:

- ◆ A long-range planning document for water supply,
- ◆ Source data for development of a regional water plan, and
- ◆ A source document for cities and counties as they prepare their General Plans.
- ◆ A key component to Integrated Regional Water Management Plans.

### 1.2 Coordination

Cal Water completed a draft of the UWMP for the District on April 1, 2011. The draft was sent to the agencies listed in Table 1.2-1 for review and comment. Copies of the draft plan are available at Cal Water's San Jose corporate, and District office for public review and comment.

<b>Table 1.2-1: Coordination with Appropriate Agencies (Table 1)</b>							
<b>Agency</b>	<b>Participated in developing the plan</b>	<b>Commented on the draft</b>	<b>Attended public meetings</b>	<b>Was contacted for assistance</b>	<b>Was sent a copy of the draft plan</b>	<b>Was sent a notice of intention to adopt</b>	<b>Not involved/ No information</b>
<b>Central Basin Municipal Water District</b>	✓			✓	✓	✓	
<b>Los Angeles County Department of Regional Planning</b>				✓	✓	✓	
<b>City of Montebello Planning Department</b>				✓	✓	✓	
<b>City of Commerce Community Development Department</b>				✓	✓	✓	
<b>City of Vernon, Planning Division</b>				✓	✓	✓	

Cal Water conducted a formal public meeting to present the UWMP on June 7, 2011, from 5:30-7:30 p.m. at the following location:

California Water Service Company  
East Los Angeles District Operations Center Conference Room  
5243 East Sheila Street  
Los Angeles, CA 90040

Proof of the public meeting is presented in Appendix A.

### 1.3 Plan Adoption

The deadline for final comments was June 15, 2011. The final plan was adopted by the Vice President of Engineering & Water Quality on June 24, 2011 and was submitted to California Department of Water Resources within 30 days of approval. Appendix A presents a copy of the signed Resolution of Plan Adoption. A copy of the final version of this report will be sent to the agencies listed above and to the California State Library.

In addition to the resolution, Appendix A also contains the following:

- ◆ Any comments received during the public review of this plan.
- ◆ Minutes from the public hearing.
- ◆ Correspondence with participating agencies.

## 1.4 Water Management Tools

Cal Water uses the following water management tools to optimize management of water resources for the District:

- ◆ Computerized Hydraulic Model for analysis of various operating conditions within the water distribution network and for planning operational and facility improvements. For smaller systems, a simple model is maintained that only models trunk lines, key sources, and major delivery points.
- ◆ Supervisory Control and Data Acquisition (SCADA) system that provides information as to how the water system is operating, provides operational control functions, and maintains a historical record of selected data.
- ◆ Revenue Management Solutions (RMS) is an information system that Cal Water uses to maintain detailed historical records including the water sales and customer service connections.
- ◆ District Report on Production (DROP) is a database that maintains water production data for wells and purchased amounts from wholesale service connections.
- ◆ Geographical Information Systems (GIS) that combines multiple sources of information and allows data to be electronically mapped for analysis and understanding of growth and constraints on land development and water use.
- ◆ Laboratory Information Management System (LIMS) provides water quality data for detailed constituent analysis of raw and finished water, determination of compliance with state and federal drinking water standards, and trends in water quality changes.
- ◆ Water Supply and Facilities Master Plan for identification of near and long term capital improvement projects for water system facilities and equipment using all of the above tools and Cal Water experience in design and construction.
- ◆ Computerized Maintenance Management System (CMMS) is a computerized database system that tracks asset data, assigns and schedules maintenance work orders, and reports on maintenance related activities. A CMMS allows a business to manage maintenance work more effectively and is a stepping stone towards Asset Management (AM).
- ◆ Groundwater Level Monitoring Program tracks groundwater fluctuations over time and is used to inform resource management and well maintenance decisions.

## 1.5 Plan Organization

This plan is organized as described in the following outline. The corresponding provisions of the California Urban Water Management Planning Act are included as references. Tables in this plan have cross-references to the tables as listed in the "Guidebook to Assist Water Suppliers to Prepare a 2010 Urban Water Management Plan" prepared by the California Department of Water Resources.

Section	Table 1.5-1: Plan Organization	Act Provision
Contact Sheet	<u>List of Contact Persons</u>	-
Section 1	<u>Plan Preparation</u> This section describes the requirement and the purpose of the Urban Water Management Planning Act, coordination, plan adoption, schedule, and management tools.	§10620 (d)(2) §10621(a -b) §10635(b) §10642 §10643 §10644 (a) §10645
Section 2	<u>System Description</u> This section describes the District service area and includes area information, population estimate, and climate description.	§10631 (a)
Section 3	<u>System Demands</u> This section describes the water supply projection methodology used to estimate water demands and supply requirements to 2040. It also includes a discussion of SBx7-7 baselines and targets.	§10631 §10608.20(e)
Section 4	<u>System Supplies</u> This section includes a detailed discussion of the water supply sources.	§10631 §10633 §10634
Section 5	<u>Water Supply Reliability and Water Shortage Contingency Planning</u> This section includes a discussion of the water supply reliability and describes the District's planning for water shortages during drought and emergency situations.	§10620 §10631 (d) §10632 §10634 §10635 (a)
Section 6	<u>Demand Management Measures</u> This section describes Cal Water's conservation programs.	§10631
Section 7	<u>Climate Change</u> This section contains a discussion of climate change.	
Section 8	<u>DWR Checklist</u> This section includes the completed DWR UWMP Checklist.	
Appendix A	<u>Resolution To Adopt The Urban Water Management Plan</u> This section includes the following: 1) Resolution 2) Letters to and comments from various agencies 3) Minutes from the public hearing 4) Correspondence with participating agencies	§10621 (b) §10642 §10644 (a)
Appendix B	<u>Service Area Map</u> This appendix includes the service area map of the District as filed with the Public Utilities Commission.	-
Appendix C	<u>Water Supply, Demand, And Projection Worksheets</u> This section includes the spreadsheets used to estimate the water demand for the District.	-
Appendix D	<u>DWR Groundwater Bulletin 118</u>	§10631 (b)(1-4)

<u>Section</u>	<u>Table 1.5-1: Plan Organization</u>	<u>Act Provision</u>
	Sections from the Department of Water Resources Bulletin 118 are included as reference and provide details of the basin for the District.	
Appendix E	<u>Tariff Rule 14.1 Water Conservation And Rationing Plan</u> This section contains the tariff rule for reference.	-
Appendix F	<u>Water Efficient Landscape Guidelines</u> This section contains the Guideline for Water Efficient Landscape that Cal Water uses at its properties, including renovations.	-
Appendix G	<u>Conservation Master Plan</u> This section contains the District's Conservation Master Plan.	§10631 (j)
Appendix H	<u>Purchase Agreement and Adjudication Order for the Central Coast Basin</u> This section includes the Central Basin adjudication order and Cal Water's Purchase Agreement.	§10631 (b)(1-4)
Appendix I	<u>Groundwater Management Plan</u> This section contains the WRD Strategic Plan.	
Appendix J	<u>WRD Strategic Plan</u> This section contains the groundwater management plan.	§10631

## 1.6 Implementation of Previous UWMP

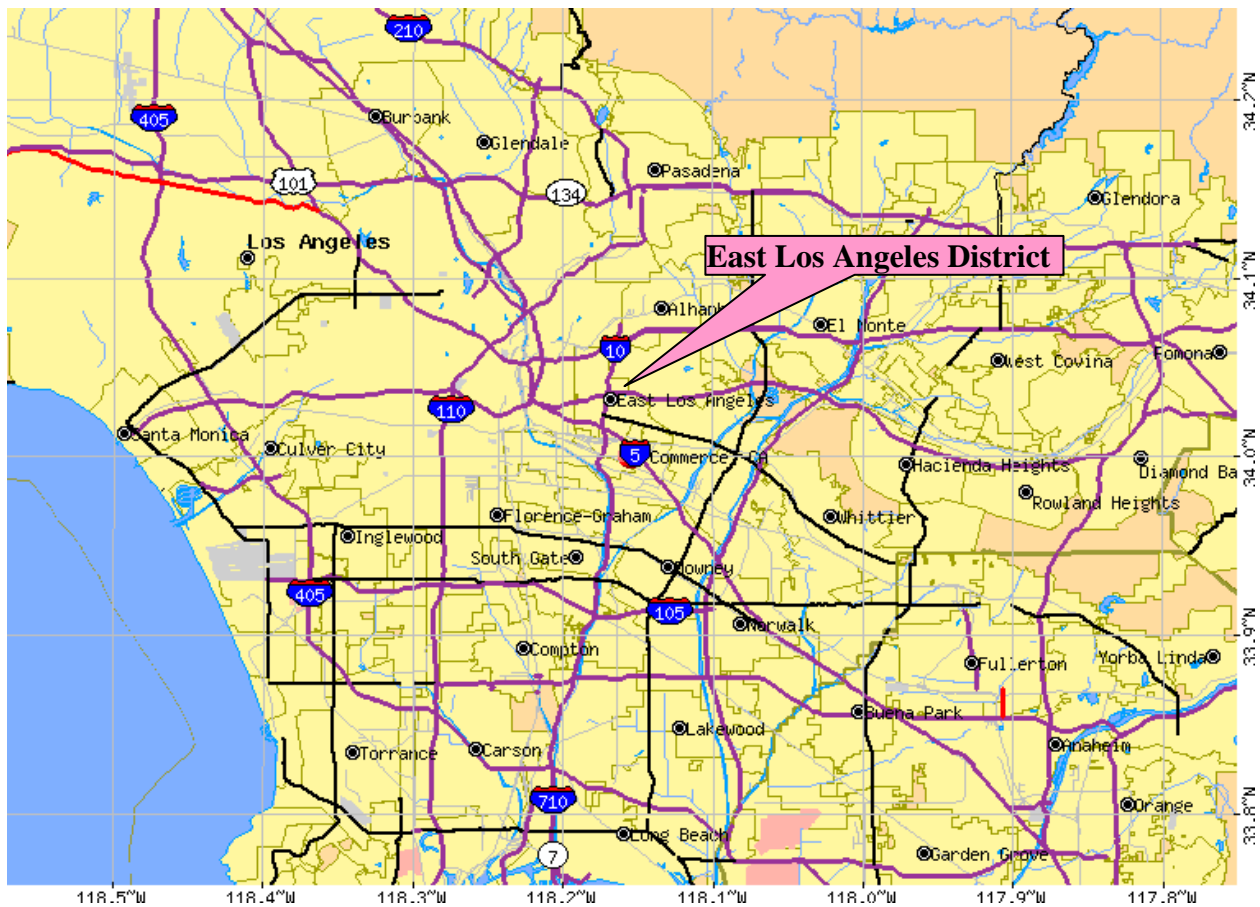
Cal Water will follow the California Water Code and file an UWMP at least once every five years on or before December 31, in years ending in five and zero. Since Cal Water operates 24 separate service districts the UWMP for each district has historically been submitted every third year to coincide with its California Public Utilities Commission (CPUC) general rate case (GRC) schedule. This method divided the districts into three sets that followed an established three-year schedule. The Plan for East Los Angeles was last submitted as part of the 2007 grouping. Cal Water has since eliminated these groupings and will now file a GRC for all districts every third year and an UWMP every fifth year.

**2 System Description**

**2.1 Service Area Description**

The East Los Angeles District is located east of downtown Los Angeles with a western boundary approximately three miles from LA's Civic Center. Figure 2.1-1 shows a general location map of the district.<sup>1</sup> The service area is built upon the uplifted Repetto Hills and spreads down on to the alluvium of the Los Angeles coastal plain.

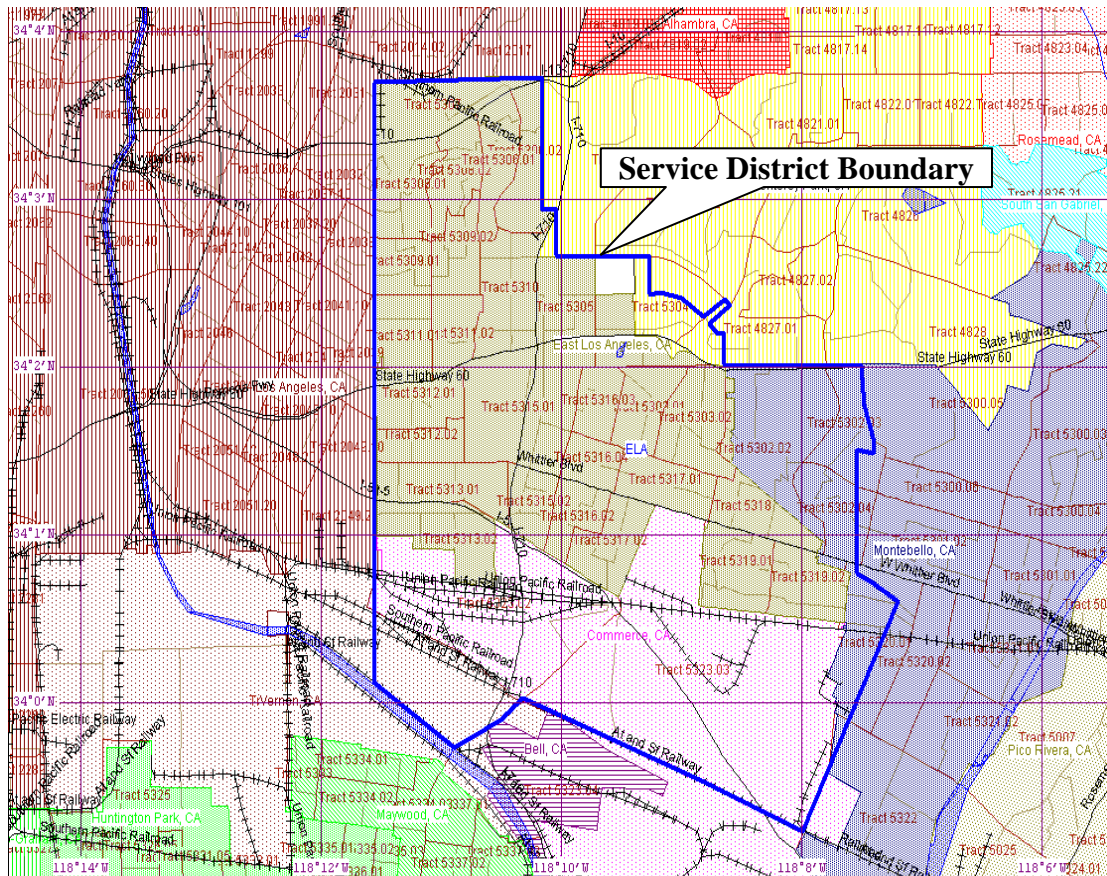
**Figure 2.1-1: General Location of East Los Angeles District – Los Angeles County**



<sup>1</sup><http://www.city-data.com/city/Commerce-California.html>

The service area encompasses a large section of unincorporated Los Angeles County known as East Los Angeles, and portions of the cities of Montebello (20%), Commerce (85%), and Vernon (10%). The system is bounded on the west and north by the City of Los Angeles, on the north by the city of Monterey Park, on the east by the city of Montebello, and on the south by the cities of Commerce, Bell, and Vernon. A portion of the District's southern boundary is the Los Angeles River.

Figure 2.1-2: General Service Area



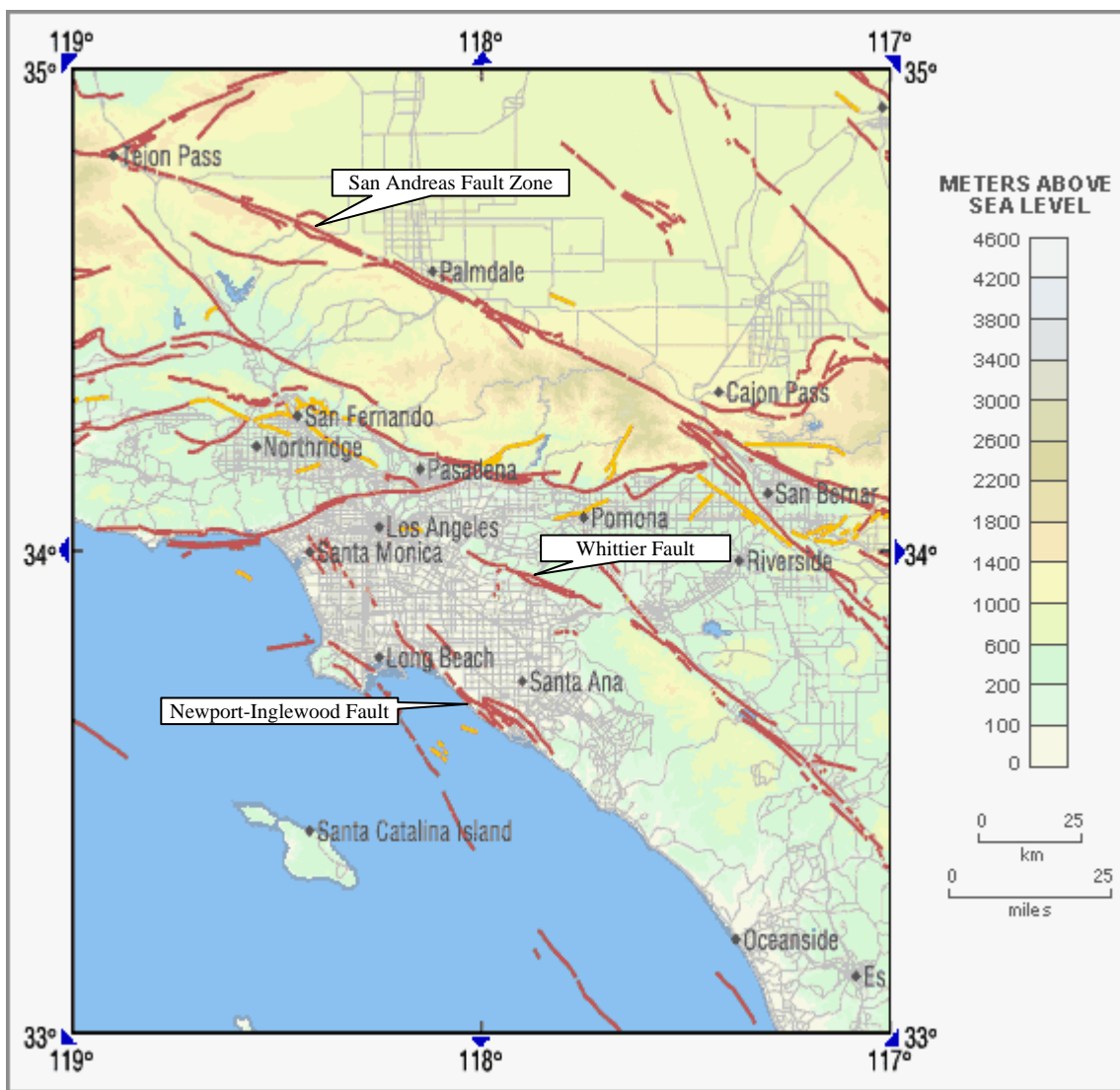
The Los Angeles Department of Water and Power (LADWP) provides retail water service to Los Angeles. The City of Monterey Park serves Monterey Park. San Gabriel Valley Water Company, the Montebello Land and Water Company, the South Montebello Irrigation District, and the City of Montebello Water Department serve Montebello. Commerce and Vernon are served by their own City Water Departments. Cal Water operates the water systems for Montebello and Commerce under contracts with these cities.

Major transportation links in the district include the Santa Ana Freeway (Interstate 5), Long Beach Freeway (Interstate 710), San Bernardino Freeway (Interstate 10), Pomona Freeway (State Highway 60), and Whittier Boulevard (State Highway 72). The Metro Gold Line operates in the district and four new stops were added in 2009. The Union

Pacific Railroad and the Atchison, Topeka, and Santa Fe Railroad both have large rail yards within the District's service area. Los Angeles International Airport (LAX) is about fifteen miles west of the heart of the District.

Major geological features of the region include the Whittier Fault, which is an extension of the Elsinore Fault system, and the Workman Mill Fault. These faults are responsible for the uplift of base rock that forms the Puente Hills and Repetto Hill on which the district is built. The Newport-Inglewood Fault, which has been identified as one of the most dangerous faults in the Los Angeles area, lies ten miles southwest of the District. A major earthquake on either of these faults could disrupt water service.

Figure 2.1-3: Major Fault Lines near the East Los Angeles District<sup>2</sup>



<sup>2</sup> <http://earthquake.usgs.gov/earthquakes/recenteqscavn/FaultMaps/118-34.html>

## 2.2 Service Area Population

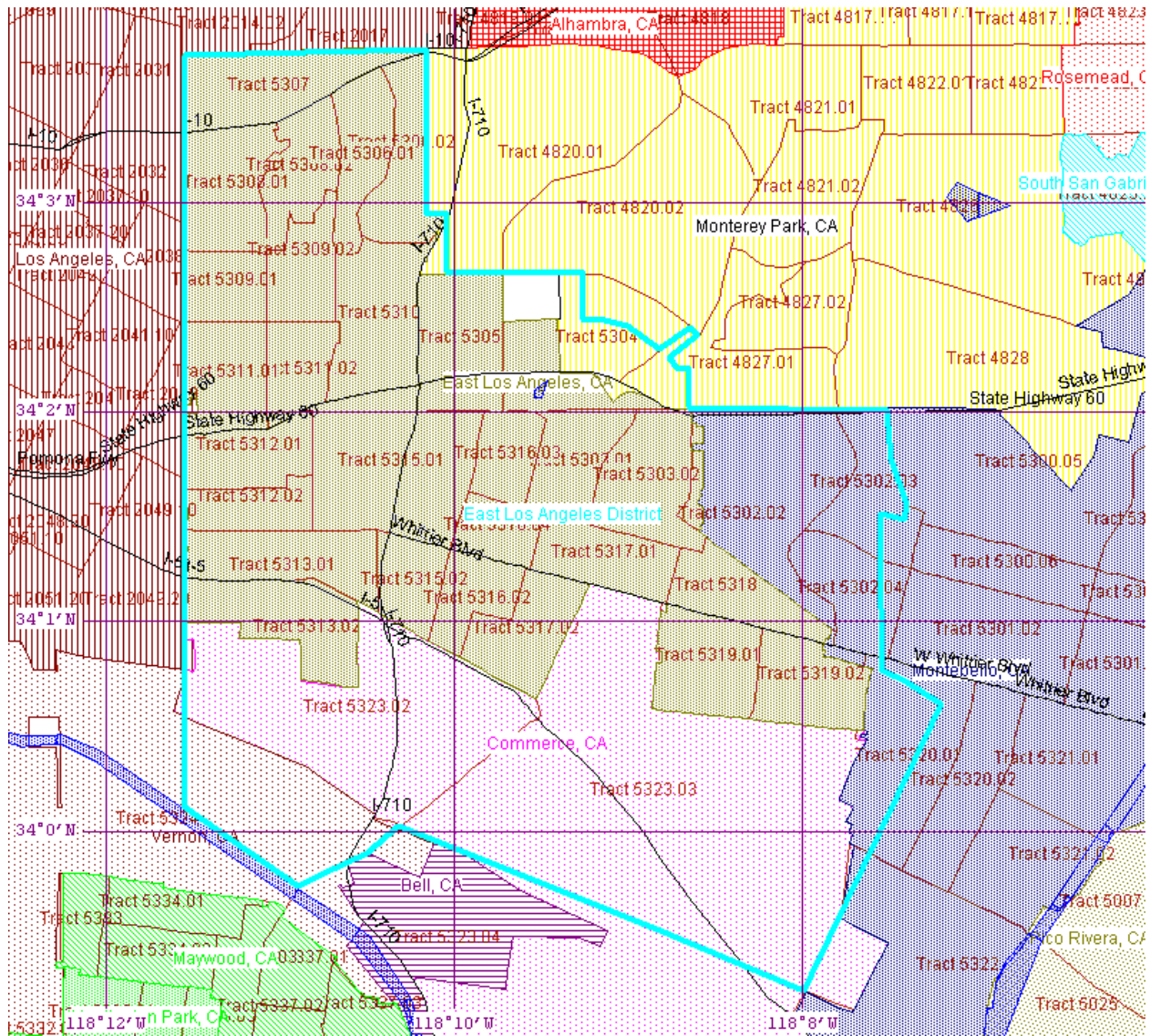
Cal Water's East Los Angeles District is growing at a rate of zero percent based on growth in total services over the past five years. Service counts since 1980 indicate that property redevelopment and growth are relatively slow in the East Los Angeles District. During the past twenty years, the annual growth in total services has never exceeded one half of one percent and has averaged 0.08 percent in the last ten years.

The East Los Angeles system is surrounded by communities served by city water departments, water districts, and other water companies. There are no significant undeveloped parcels within the District, indicating that growth will be limited to redevelopment.

Based on 2000 U.S. Census data, considering actual service connection growth and assuming that density has remained unchanged since the census was conducted, Cal Water estimates that as of December 2009, the District's population is approximately 148,740. A density of 6.78 persons per residential service (single family services plus multifamily units) was used for this estimate.

The process for estimating population in the East Los Angeles District began by overlaying the U.S. Census 2000 Block data with the Cal Water service area map (SAM), as shown in Figure 2.2-1.

Figure 2.2-1: Approximated SAM with US Census 2000 Tract Map



A summary of the census data for the year 2000 is shown in Table 2.2-1. LandView 5 and MARPLOT<sup>®</sup> software were used to generate the data<sup>1</sup>.

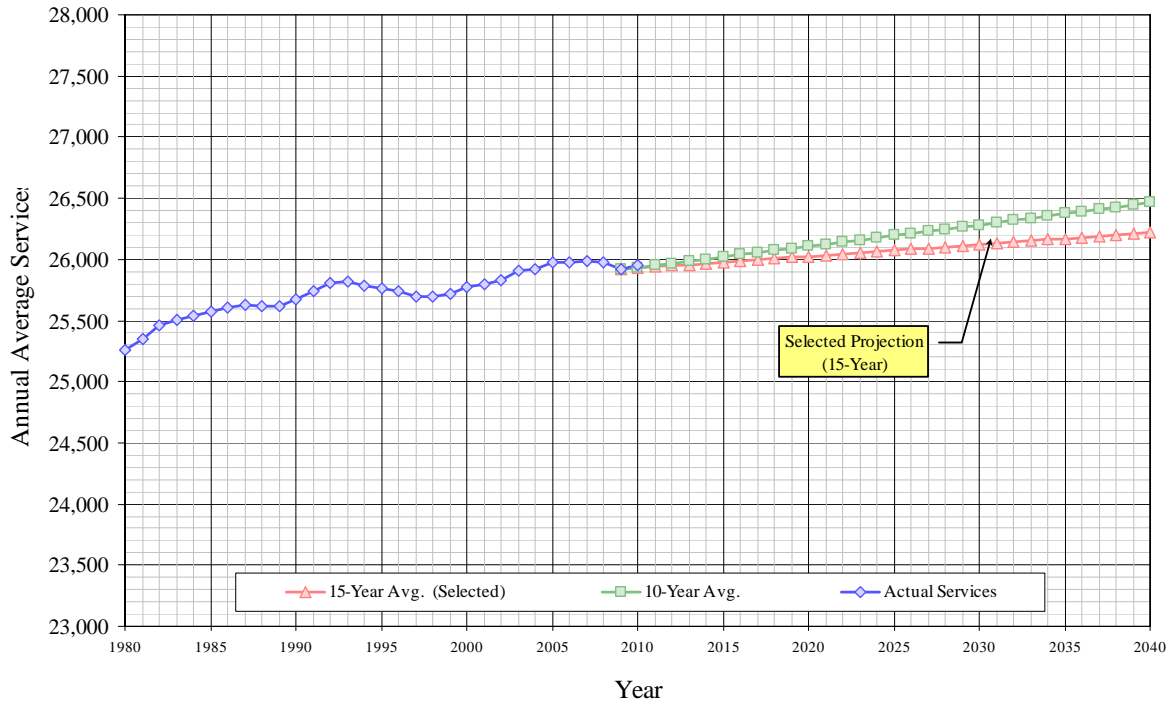
Table 2.2-1: Summary of Census 2000 Data			
	Census Blocks	Population	Housing Units
East Los Angeles Service Area	950	148,480	38,246

This data was used as a baseline for estimating population starting in 2000. To calculate estimated population after 2000, the Census 2000 population was then divided by the total number of dwelling units served by Cal Water in 2000 to produce a population density value. This value was then multiplied by the number of Cal Water dwelling units in each future year.

To establish a range of future service counts the ten year and fifteen year projected growth rates for each service type were continued through 2040. The fifteen-year average is the long-term growth rate, calculated from 1995 to 2009, and has an overall annual average growth rate of 0.03 percent. The ten-year average, the shorter-term growth rate calculated from 1998 to 2009 exhibits an overall annual average growth rate of 0.08 percent. The ten-year growth rate had the strongest correlation with the historic trend but was not chosen to calculate projected water demands because in the case of ELA, past trends are not thought to be a good indication of future conditions. Future growth will likely be much slower than in the past do to the limited space available for development. As a result the fifteen-year average was chosen as the most likely projection. A comparison of service connection growth rates is shown in Figure 2.2-2.

<sup>1</sup> LandView 5 and MARPLOT<sup>®</sup> software, US Census Bureau/Environmental Protection Agency, downloaded from: <http://www.census.gov/geo/landview/lv5/lv5.html>, <http://www.epa.gov/ceppo/comeo/marplot.htm>

Figure 2.2-2: Historical & Projected Services

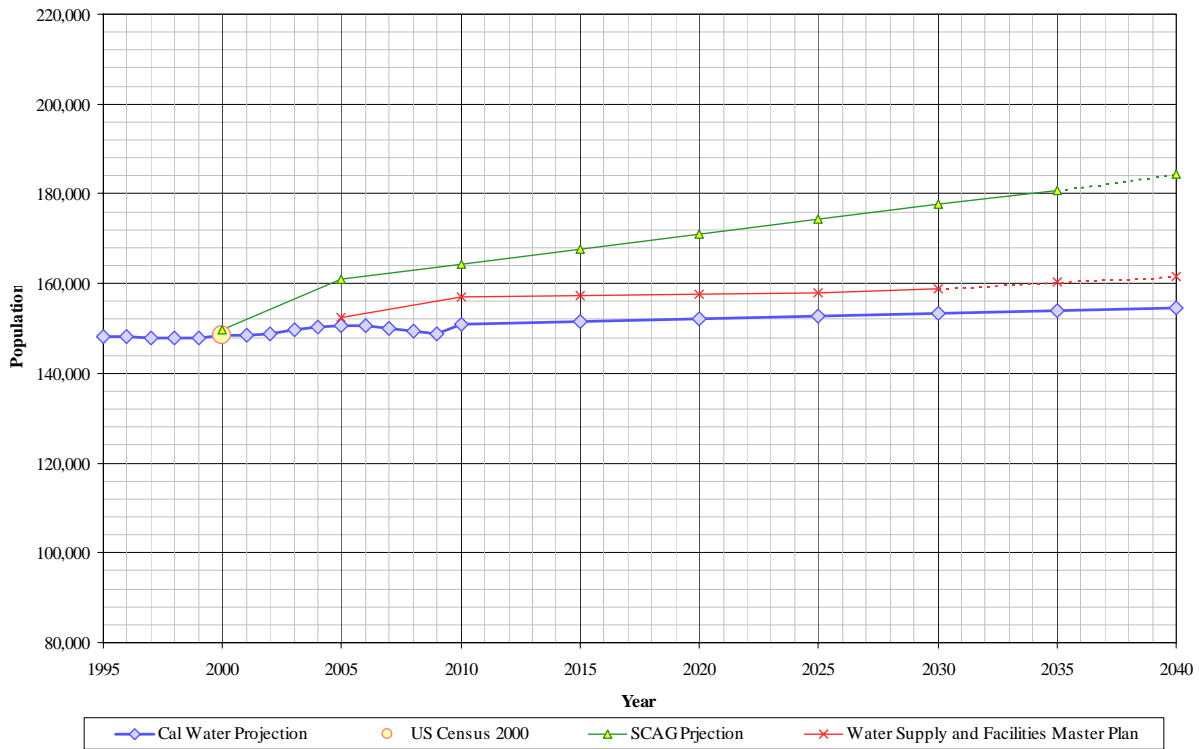


Based on this projection, Cal Water estimates the service area’s population could reach 154,630 by 2040. Table 2.2-2 lists the population growth in 5-year increments.

Table 2.2-2: Population - Current and Projected (Table 2)								
	2005	2010	2015	2020	2025	2030	2035	2040
<b>Service Area Population</b>	150,640	150,890	151,510	152,130	152,760	153,380	154,010	154,630

The population estimates for the District are compared to projections made by other governmental agencies, as shown in Figure 2.2-3. Cal Water's population projection is compared to the projections presented by the Southern California Association of Governments (SCAG) and to data included in Cal Water's Water Supply and Facilities Master Plan for the East Los Angeles District.

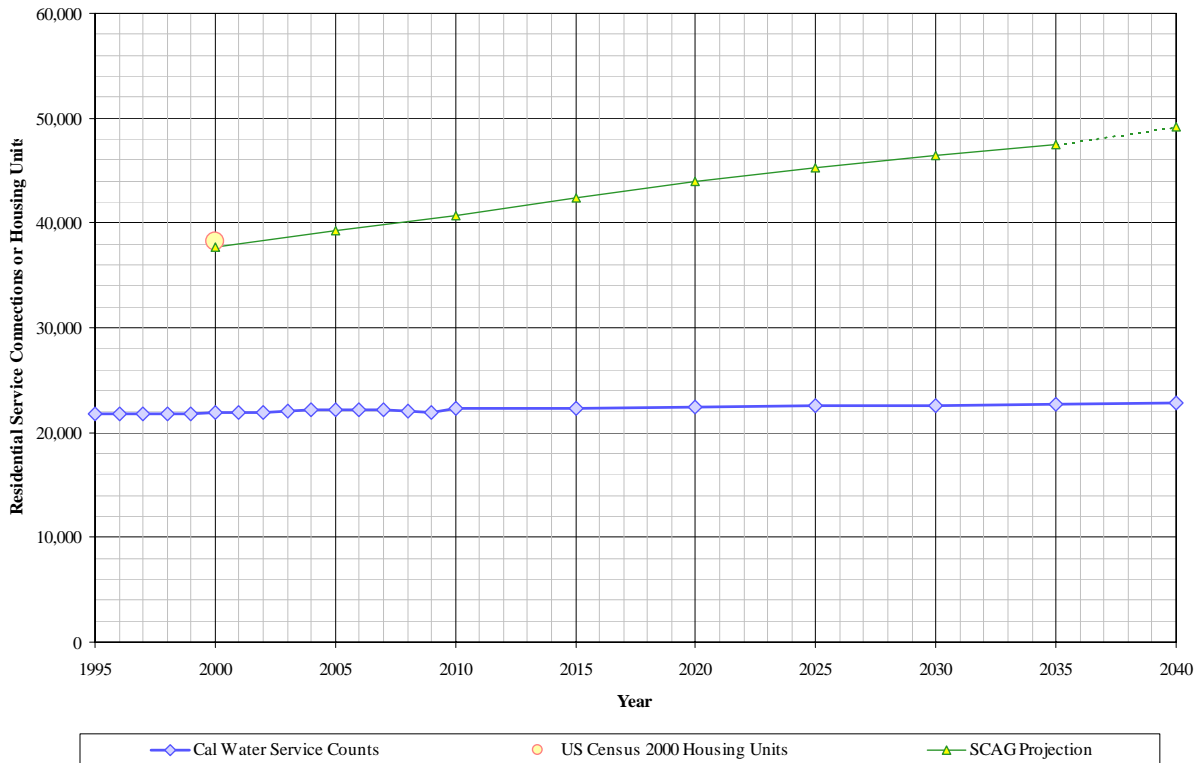
Figure 2.2-3: Estimated Population Comparison



From the graph above, we can see that the growth rate projected by Cal Water is slower than the projected rate of increase estimated by both SCAG and Cal Water's Master Plan. SCAG data was the original source of the population estimate for the Master Plan, which resulted in a similar growth rate for the two comparison projections. The SCAG projection includes areas near but outside of Cal Water's East Los Angeles Service District that have a greater potential for growth. As a result SCAG's total population figures are greater. Cal Water's service area is mostly built out and population growth will only occur through redevelopment, which is reflected in the Cal Water projection.

Similarly, the housing count was estimated by comparing the US Census 2000 data and the service counts for the East Los Angeles District, Figure 2.2-4. The service count for the year 2000 is lower than the US Census 2000 housing units estimate. This is most likely the result of District service connections including one meter that serves several housing units, such as duplexes or apartments, whereas the US Census data combines all of the housing units (single and multifamily residences). The US Census 2000 housing unit figures were established by summarizing the individual census blocks enclosed within the service area of the District.

Figure 2.2-4: Estimated Housing Comparison

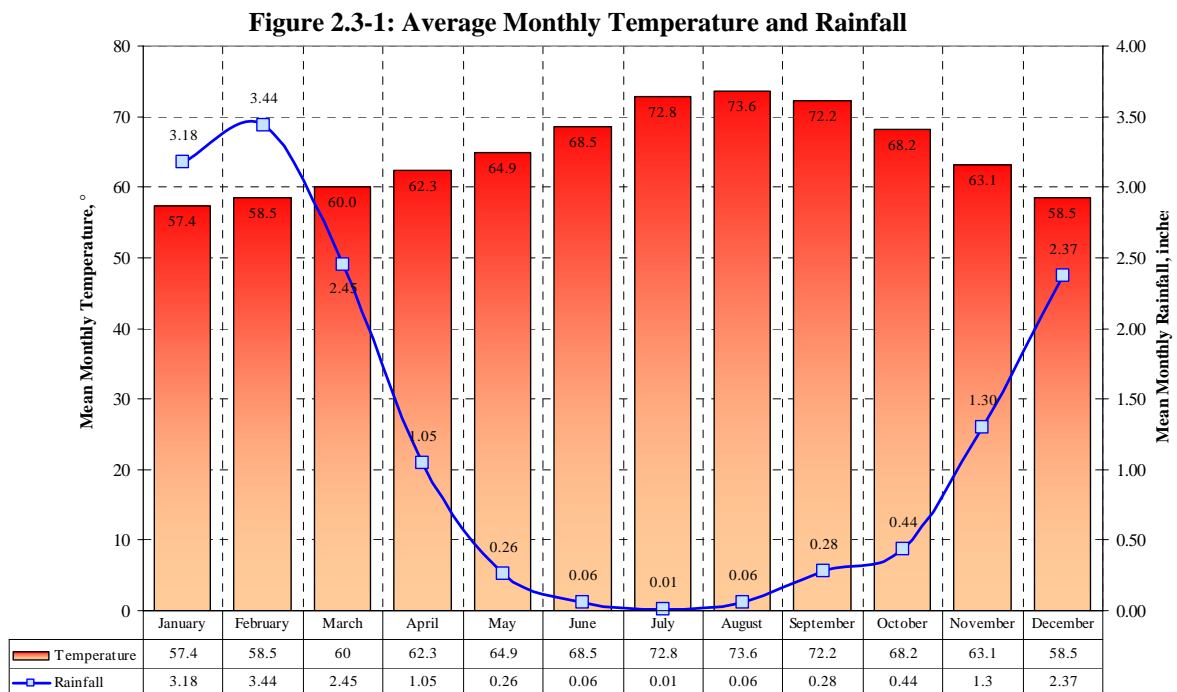


### 2.3 Service Area Climate

The climate for East Los Angeles is mild with warm dry summers and cool winters. The majority of precipitation falls during late autumn, winter, and early spring. Table 2.3-1 lists the average annual conditions for the weather station at the Los Angeles Civic Center.

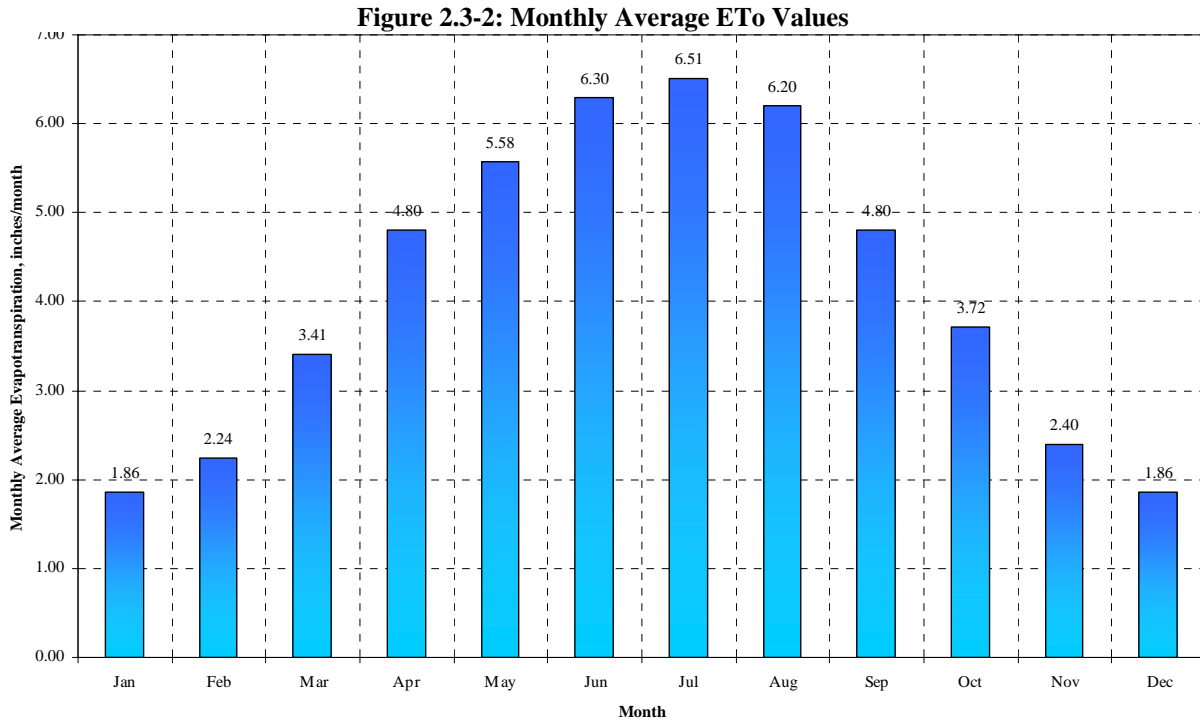
Table 2.3-1: Average Annual Climate (Table 3)		
Average Temperature	Average Rainfall	Annual Total Evapo- transpiration
64.9°F	14.8 inches	49.7 inches

Figure 2.3-1 displays the average monthly temperature and rainfall<sup>3</sup>. Additional climate data is provided in the Appendix C, worksheet 18.



<sup>3</sup>Western Regional Climate Center, <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5115>

Figure 2.3-2 displays the monthly average evapotranspiration values for the area of the District<sup>3</sup>. Evapotranspiration is the sum of water loss from a watershed because of the processes of evaporation from the earth’s surface and transpiration from plant leaves. The annual estimated transpiration for East Los Angeles is 49.7 inches. The average annual rainfall of 14.9 inches is only 30 percent of the annual total evapotranspiration value. This indicates that the East Los Angeles District is located in a water-deficient environment. The dry landscape with poorly developed soils and scrubby vegetation are evidence of this low amount of naturally available water.



<sup>3</sup> California Irrigation Management Information System (CIMIS), EvapoTranspiration (Eto) Zones Map - Zone 15, <http://www.cimis.water.ca.gov/cimis/welcome.jsp>



### 3 System Demands

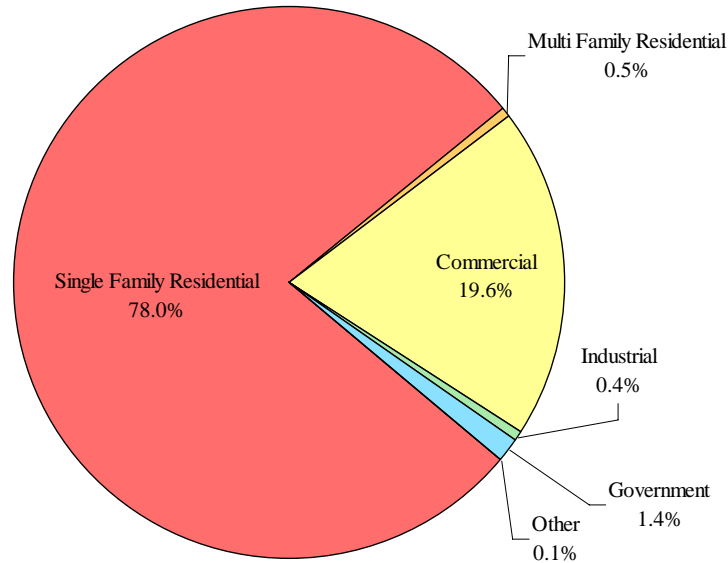
#### 3.1 Distribution of Services

Cal Water classifies customer service connection categories as follows:

- ◆ Single Family Residential
- ◆ Multi Family Residential
- ◆ Commercial
- ◆ Industrial
- ◆ Government
- ◆ Other

Land use in the East Los Angeles District is dominated by residential and commercial activities, as seen in the distribution of services for the District, Figure 3.1-1. Single-family residential services account for 78.0 percent of all services; multifamily residential services represent 0.5 percent, and commercial services 19.6 percent. Thus, 98.1 percent of all services are for residential and commercial customers. The remaining 1.9 percent includes industrial, governmental uses, and other functions such as temporary construction meters.

**Figure 3.1-1: Distribution of Services (2010)**



### 3.2 Historical and Current Water Demand

Historical sales values are illustrated in Figure 3.2-1. Historical service counts are illustrated in Figure 3.2-2.

Figure 3.2-1: Historical Sales

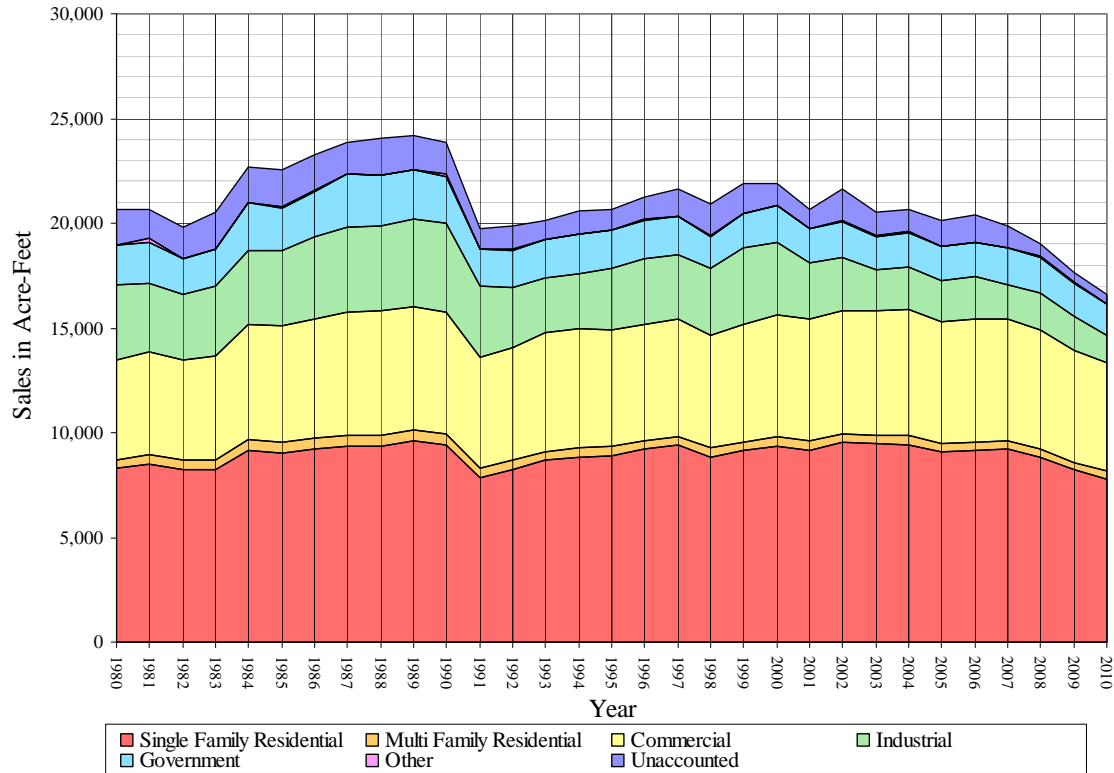
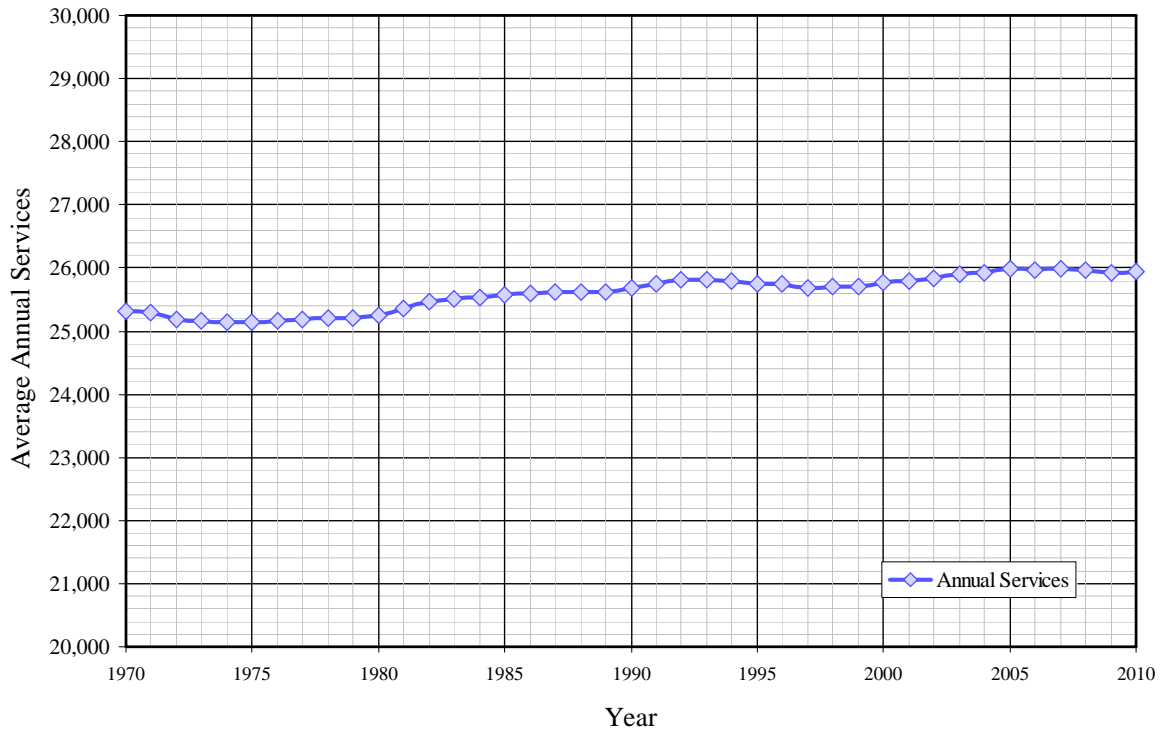
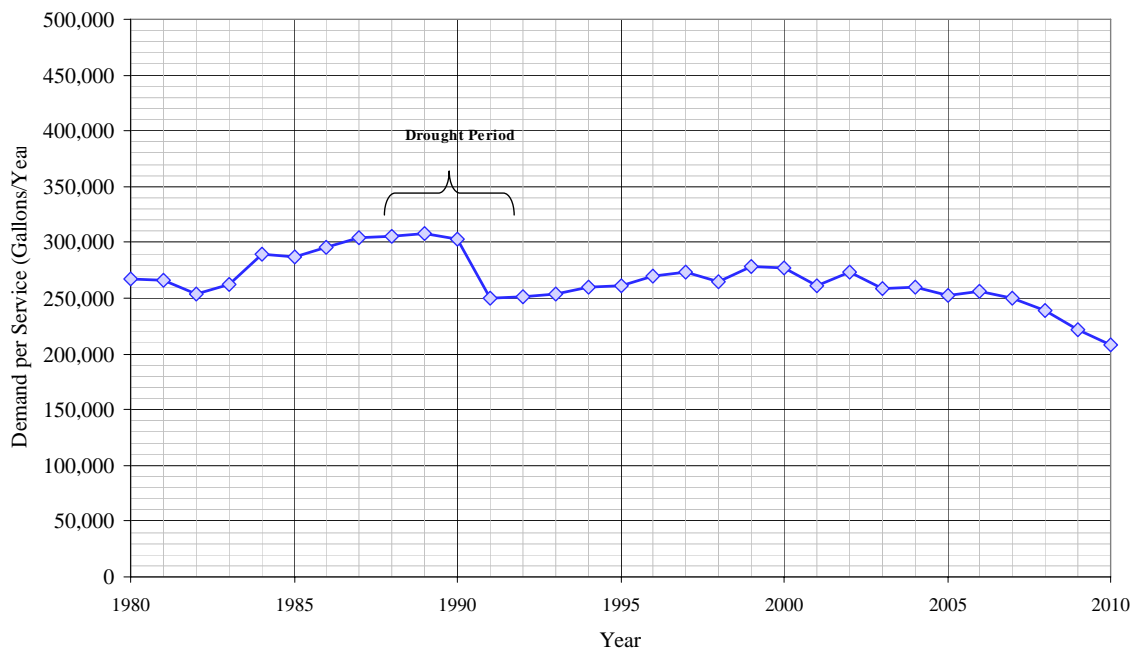


Figure 3.2-2: Historical Service Counts



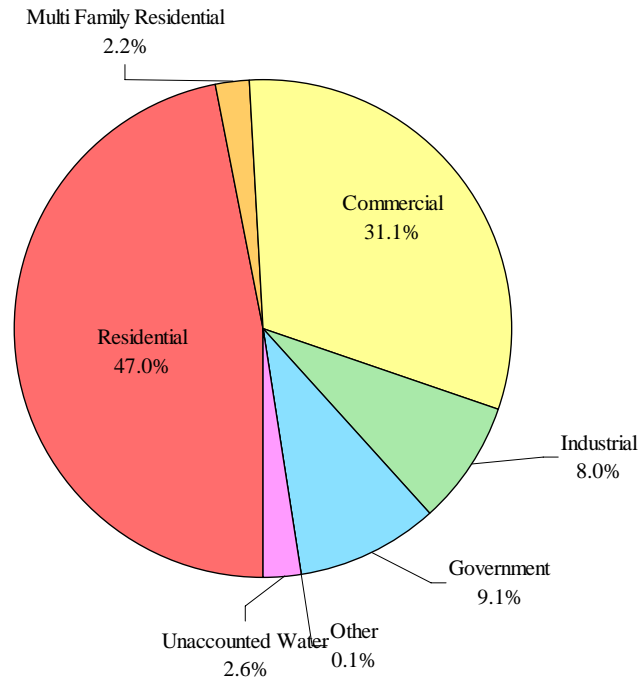
Demand per service was established as a function of historical sales and service data. The combined demand for all services fluctuates between 200,000 to 310,000 gallons per service per year, Figure 3.2-3.

Figure 3.2-3: Historical Demand per Service



Single family residential water use represents the one of the smallest demand per service segments in the District with a five-year average of 142,254 gallons per service per year. This category uses 47.0 percent of the total demand. The multifamily residential use was 2.2 percent of the total demand with a demand per service that has a five-year average of 987,598 gallons per service per year. The combined residential sector component of demand is equal to 49.2 percent of the total demand.

**Figure 3.2-4: Percent of Total Demand by Type of Use (2010)**



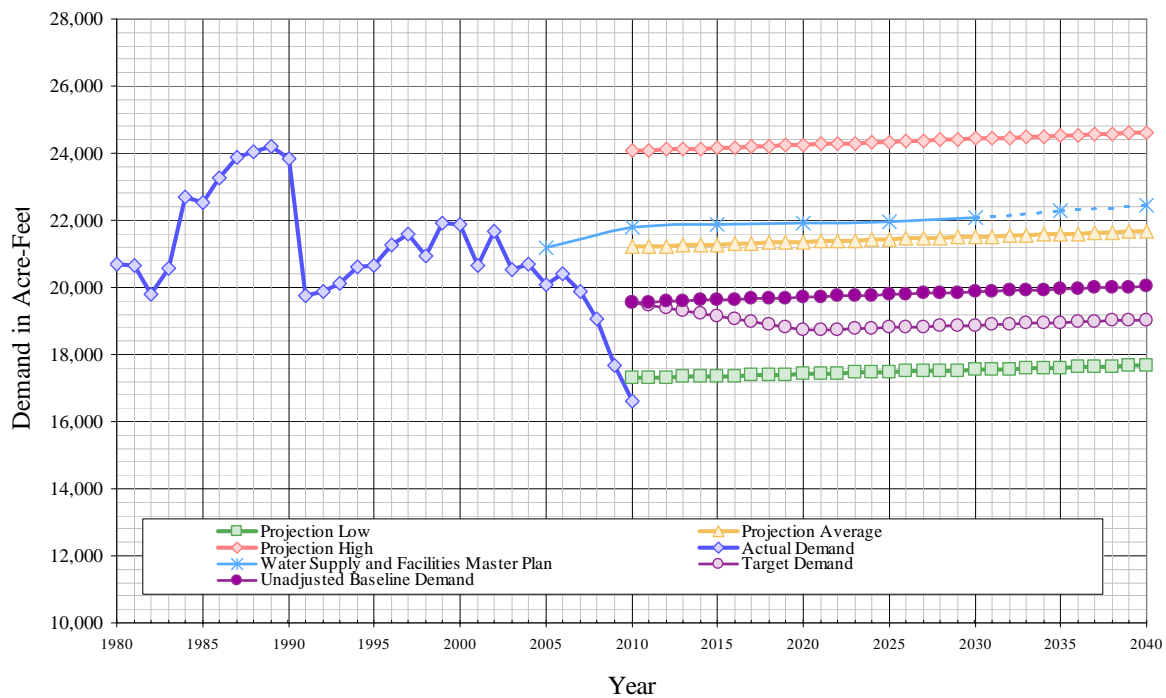
### 3.3 Projected Water Demands

Cal Water has historically made its water demand projections by first calculating individual growth rates for each of its service connection types. These growth rates were based on five or ten year averages of service count data, and were extended over the planning horizon resulting in projected service counts. A set of three demand per service values (low, average, high), which were based on past customer usage records, were then applied to the projected service counts to calculate projected water demands for each service type. Due to the passage of Senate Bill 7 (SBx7-7) this method is no longer used as the primary method for calculating projected demands. However, these calculations are still used as the basis for calculating projected services, population, and the distribution of demand amongst service connection types.

The method used in this UWMP to determine future water demands is a response to SBx7-7 requirements. It results in two demand projections; the unadjusted baseline demand, and the target demand. The unadjusted baseline water demand projection is the total demand expected without any achieved conservation. It is equal to forecasted population multiplied by the 2005-09 average, or 116 gpcd.

The target water demand projection includes conservations savings due to both passive and active demand management, which are described in Section 6. The target demand is calculated by multiplying SBx7-7 target gpcd values and projected population. These conservation savings are illustrated in the comparison of projected demands shown in Figure 3.3-1.

Figure 3.3-1: Historical & Projected Demand



The water demand projection calculation used for SBx7-7 compliance relies only on future population and gpcd target values. Projected water deliveries separated by customer type can not be determined by this method alone. To get a breakdown of future deliveries Cal Water used the ratio of individual deliveries for each class to the total amount that was developed for the previously used water demand projection. This ratio was applied to the total adjusted baseline demand, which resulted in the projected deliveries listed in Tables 3.3-1 through 3.3-6. These demands include the conservation savings associated with the demand management measures described in Section 6.

Table 3.3-1: Actual 2005 Water Deliveries – AF (Table 3)

	2005				
	Metered		Not Metered		Total
Water Use Sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	20,371	9,073	-	-	9,073
Multi-family	136	432	-	-	432
Commercial	4,993	5,775	-	-	5,775
Industrial	127	1,995	-	-	1,995
Institutional/government	331	1,586	-	-	1,586
Landscape	-	-	-	-	-
Recycled	-	-	-	-	-
Other	20	1,227	-	-	1,227
<b>Total</b>	<b>25,977</b>	<b>20,088</b>	<b>0</b>	<b>0</b>	<b>20,088</b>

Table 3.3-2: Actual 2010 Water Deliveries – AF (Table 4)

	2010				
	Metered		Not Metered		Total
Water Use Sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	20,257	7,794	-	-	7,794
Multi-family	135	368	-	-	368
Commercial	5,073	5,153	-	-	5,153
Industrial	112	1,326	-	-	1,326
Institutional/government	361	1,517	-	-	1,517
Landscape	-	-	-	-	-
Recycled	-	-	-	-	-
Other	15	424	-	-	424
<b>Total</b>	<b>25,953</b>	<b>16,583</b>	<b>0</b>	<b>0</b>	<b>16,583</b>

Table 3.3-3: Projected 2015 Water Deliveries – AF (Table 5)

	2015				
	Metered		Not Metered		Total
Water Use Sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	20,240	8,170	-	-	8,170
Multi-family	135	390	-	-	390
Commercial	5,093	4,982	-	-	4,982
Industrial	114	2,387	-	-	2,387
Institutional/government	375	1,890	-	-	1,890
Landscape	-	-	-	-	-
Recycled*	-	-	-	-	-
Other	20	-	-	-	-
<b>Total</b>	<b>25,976</b>	<b>17,820</b>	<b>-</b>	<b>-</b>	<b>17,820</b>

\*Note: Recycled water deliveries are listed separately in Table 3.4-1 (Table 10)

Water Use Sectors	2020				
	Metered		Not Metered		Total
	# of accounts	Volume	# of accounts	Volume	Volume
Single family	20,265	8,185	-	-	8,185
Multi-family	135	391	-	-	391
Commercial	5,107	4,999	-	-	4,999
Industrial	114	2,392	-	-	2,392
Institutional/government	382	1,927	-	-	1,927
Landscape	-	-	-	-	-
Recycled*	-	-	-	-	-
Other	20	-	-	-	-
<b>Total</b>	<b>26,025</b>	<b>17,894</b>	<b>-</b>	<b>-</b>	<b>17,894</b>

\*Note: Recycled water deliveries are listed separately in Table 3.4-1 (Table 10)

Water Use Sectors	2025		2030	
	Metered		Metered	
	# of accounts	Volume	# of accounts	Volume
Single family	20,291	8,199	20,317	8,213
Multi-family	136	392	136	393
Commercial	5,122	5,016	5,137	5,032
Industrial	115	2,398	115	2,402
Institutional/government	389	1,966	397	2,004
Landscape	-	-	-	41
Recycled*	-	-	-	-
Other	20	-	20	-
<b>Total</b>	<b>26,073</b>	<b>17,970</b>	<b>26,122</b>	<b>18,086</b>

\*Note: Recycled water deliveries are listed separately in Table 3.4-1 (Table 10)

Water Use Sectors	2035		2040	
	Metered		Metered	
	# of accounts	Volume	# of accounts	Volume
Single family	20,343	8,227	20,368	8,240
Multi-family	136	394	136	395
Commercial	5,152	5,049	5,167	5,065
Industrial	115	2,407	115	2,412
Institutional/government	404	2,044	412	2,084
Landscape	-	41	-	41
Recycled*	-	-	-	-
Other	20	-	20	-
<b>Total</b>	<b>26,170</b>	<b>18,162</b>	<b>26,219</b>	<b>18,237</b>

\*Note: Recycled water deliveries are listed separately in Table 3.4-1 (Table 10)

### 3.3.1 Senate Bill No. 7 Baselines and Targets

Cal Water is in the process of expanding current conservation programs and developing new programs for its 24 service districts. Over the next five years, Cal Water conservation program expenditures are likely to increase significantly due in large measure to recently adopted state policies requiring significant future reductions in per capita urban water use. These include the passage of Senate Bill No. 7 (SBx7-7) in November 2009, which mandated a statewide 20 percent reduction in per capita urban water use by 2020, as well as recent decisions by the California Public Utilities Commission (CPUC) directing Class A and B water utilities to adopt conservation programs and rate structures designed to achieve reductions in per capita water use, and the *Memorandum of Understanding Regarding Urban Water Conservation in California* (MOU), of which Cal Water has been a signatory since 1991. In preparing for this program expansion, Cal Water has spent the past year developing five-year conservation program plans for each of its service districts. The complete East Los Angeles District Conservation Master Plan is included as Appendix G.

SBx7-7, which was signed into law in November 2009, amended the State Water Code to require a 20 percent reduction in urban per capita water use by December 31, 2020. Commonly known as the 20x2020 policy, the new requirements apply to every retail urban water supplier subject to the Urban Water Management Planning Act (UWMPA).

The state is required to make incremental progress toward this goal by reducing per capita water use by at least 10 percent on or before December 31, 2015. SBx7-7 requires each urban retail water supplier to develop interim and 2020 urban water use targets in accordance with specific requirements. They will not be eligible for state water grants or loans unless they comply with those requirements.

The law provides each water utility several ways to calculate its interim 2015 and ultimate 2020 water reduction targets. In addition, water suppliers are permitted to form regional alliances and set regional targets for purposes of compliance. Under the regional compliance approach, water suppliers within the same hydrologic region can comply with SBx7-7 by either meeting their individual target or being part of a regional alliance that meets its regional target. For all Cal Water districts falling within the same hydrologic region, Cal Water intends to enter regional alliances as listed in Table 3.3-7. The East Los Angeles District lies within the South Coast hydrologic region, along with Dominguez, Hermosa-Redondo, Palos Verdes, and Westlake Districts.

Hydrologic Region	Cal Water Districts in Region
North Coast	Redwood Valley
San Francisco Bay Area	Bear Gulch, Livermore, Los Altos, Mid- Peninsula, South San Francisco
Central Coast	King City, Salinas
South Coast	Dominguez, <b>East LA</b> , Hermosa-Redondo, Palos Verdes, Westlake
Sacramento River	Chico, Dixon, Marysville, Oroville, Willows
San Joaquin	Stockton
Tulare Lake	Bakersfield, Kern River Valley, Selma, Visalia
North Lahontan	None
South Lahontan	Antelope Valley
Colorado River	None

District-specific and regional targets for Cal Water districts within the South Coast hydrologic region are shown in Table 3.3-8. The 2015 and 2020 district-specific targets for East Los Angeles District are 121 and 115 gpcd, respectively. Over the last five years district demand, net of recycled water use, has averaged about 116 gpcd. Thus, current per capita demand is already below the 2015 target and on par with the 2020 target.

District	Population	2015 Target	2020 Target
Dominguez	144,190	193	171
East Los Angeles	148,740	121	115
Hermosa-Redondo	94,070	134	126
Palos Verdes	67,620	253	225
Westlake	16,740	442	393
<b>Regional Targets<sup>1</sup></b>		<b>176</b>	<b>160</b>

<sup>1</sup> Regional targets are the population-weighted average of the district targets.

The following analysis presents the individual SBx7-7 compliance targets for the East Los Angeles District.

Under SBx7-7, an urban retail water supplier may adopt one of four different methods for determining the 2020 gpcd target:

1. Set the 2020 target to 80 percent of average GPCD for any continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.
2. Set the 2020 target as the sum of the following:
  - a. 55 GPCD for indoor residential water use.

- b. 90 percent of baseline CII water uses, where baseline CII GPCD equals the average for any contiguous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.
  - c. Estimated per capita landscape water use for landscape irrigated through residential and dedicated irrigation meters assuming water use efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Section 2.7 of Division 2 of Title 23 of the California Code of Regulations.
3. Set the 2020 target to 95 percent of the applicable state hydrologic region target, as set forth in the state's draft 20x2020 Water Conservation Plan (dated April 30, 2009).
4. A method determined by DWR through the urban stakeholder process.

For district-specific SBx7-7 compliance, targets were set to either 80 percent of baseline gpcd (Method 1) or 95 percent of the District's hydrologic region target (Method 3), whichever was greater. An analysis for Method 2 was not performed due to a lack of data necessary for this method. Method 4 was also not considered because it was not available when the Conservation Master Plan process began.

Under Method 1, the 2015 and 2020 targets are set to 90 percent and 80 percent of baseline water use, respectively. Baseline water use is the average water use for any continuous 10-year period ending between 2004 and 2010. For the East Los Angeles District, the 10-year base period 1995-2004 yielded the maximum target under this method. The 2015 target is 115 gpcd and a 2020 target is 102 gpcd. Table 3.3-9 summarizes the base period ranges and Table 3.3-10 lists the per capita demand over the ten-year base period.

Base	Parameter	Value	Units
10-15-year base period	2008 total water deliveries	18,427	AF
	2008 total volume of delivered recycled water	0	AF
	2008 recycled water use as a percent of total deliveries	0	%
	Number of years in base period	10	years
	Year beginning base period range	1995	
	Year ending base period range	2004	
5-year base period	Number of years in base period	5	years
	Year beginning base period range	2003	
	Year ending base period range	2007	

Base Period Year		Distribution System Population	Daily System Gross Water Use (mgd)	Annual Daily Per Capita Water Use (gpcd)
Sequence Year	Calendar Year			
Year 1	1995	148,060	18.42	124
Year 2	1996	148,090	18.99	128
Year 3	1997	147,850	19.29	130
Year 4	1998	147,910	18.68	126
Year 5	1999	147,980	19.57	132
Year 6	2000	148,480	19.54	132
Year 7	2001	148,570	18.43	124
Year 8	2002	148,890	19.34	130
Year 9	2003	149,750	18.33	122
Year 10	2004	150,360	18.47	123
<b>Base Daily Per Capita Water Use</b>				<b>127</b>

Under Method 3, the 2015 and 2020 targets are set to 95 percent of the 2015 and 2020 targets for the hydrologic region in which the district is located. Because the East Los Angeles District is located in the South Coast hydrologic region the East Los Angeles District's 2015 target is 157 gpcd and the 2020 target is 115 gpcd.

The SBx7-7 target for 2020 cannot exceed 95 percent of the District's five-year baseline water use, where the baseline period ends no earlier than December 31, 2007 and no later

than December 31, 2010. The District’s 2020 target cannot exceed this level, regardless of which method is used to calculate it. The maximum allowable target in the East Los Angeles District is 115 gpcd, as shown in Table 3.3-12. In this case, neither target calculation method results in a target exceeding the maximum allowable target, so no adjustment is necessary.

<b>Table 3.3-11: Daily Base Per Capita Water Use-5-Year Range (Table 15)</b>				
<b>Base Period Year</b>		<b>Distribution System Population</b>	<b>Daily System Gross Water Use (mgd)</b>	<b>Annual Daily Per Capita Water Use (gpcd)</b>
<b>Sequence Year</b>	<b>Calendar Year</b>			
Year 1	2003	149,750	18.33	122
Year 2	2004	150,360	18.47	123
Year 3	2005	150,640	17.95	119
Year 4	2006	150,740	18.22	121
Year 5	2007	150,070	17.76	118
<b>Base Daily Per Capita Water Use</b>				<b>121</b>

Based on the results of this analysis as shown in Table 3.3-12, the Method 3 targets were chosen for the East Los Angeles District.

<b>Table 3.3-12. East Los Angeles District SBx7-7 Targets</b>	
<b>Maximum Allowable Target</b>	
Base Period:	2003-2007
Per Capita Water Use:	121
Maximum Allowable 2020 Target:	115
<b>Method 1: 80% of Baseline Per Capita Daily Water Use</b>	
Base Period:	1995-2004
Per Capita Water Use:	127
2015 Target:	115
2020 Target:	102
<b>Method 3: 95% of Hydrologic Region Target</b>	
Hydrologic Region:	South Coast
2015 Target:	157
2020 Target:	115
<b>Selected District Target</b>	
2015 Target:	157
2020 Target:	115

### 3.3.2 Low Income Housing Projected Demands

California Senate Bill No. 1087 (SB 1087), Chapter 727, was passed in 2005 and amended Government Code Section 65589.7 and Water Code Section 10631.1. SB 1087 requires local governments to provide a copy of their adopted housing element to water and sewer providers. In addition, it requires water providers to grant priority for service allocations to proposed developments that include housing units for lower income families and workers. Subsequent revisions to the Urban Water Management Planning Act require water providers to develop water demand projections for lower income single

Cal Water does not maintain records of the income level of its customers and does not discriminate in terms of supplying water to any development. Cal Water is required to serve any development that occurs within its service area, regardless of the targeted income level of the future residents. It is ultimately the City's or County's responsibility to approve or not approve developments within the service area.

For the purposes of estimating projected demand from low income housing, Cal Water used information for the Housing Element for the City of Los Angeles, which included the areas served by the East Los Angeles District. According to the Housing Element, 12.1 percent of the households qualify as low income.<sup>4</sup> This percentage was applied to the total projected residential demand to estimate projected low income demands, as shown in Table 3.3-13.

<b>Low Income Water Demands</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>
Single-family residential	989	990	992	994	995	997
Multi-family residential	47	47	47	48	48	48
<b>Total</b>	<b>1,036</b>	<b>1,038</b>	<b>1,040</b>	<b>1,041</b>	<b>1,043</b>	<b>1,045</b>

As a benefit to our customers, Cal Water offers its Low Income Rate Assistance Program (LIRA) in all of its service districts. Under the LIRA Program qualified customers are able to receive a discount on their monthly bills.

<sup>4</sup> "Draft, City of Los Angeles, Housing Element, 2006-2014", City of Los Angeles, March 24, 2008, Page II-10

### 3.4 Total Water Use

Cal Water does not currently sell water to other agencies, nor does it provide water directly for saline barriers, groundwater recharge, conjunctive use. The potential additional water uses within Cal Water's service area are discussed and quantified in Section 4. For the purposes of this UWMP it is assumed that the only potable and recycled water sales to customers and distribution system losses are included in the total demand. These are summarized in Table 3.4-1.

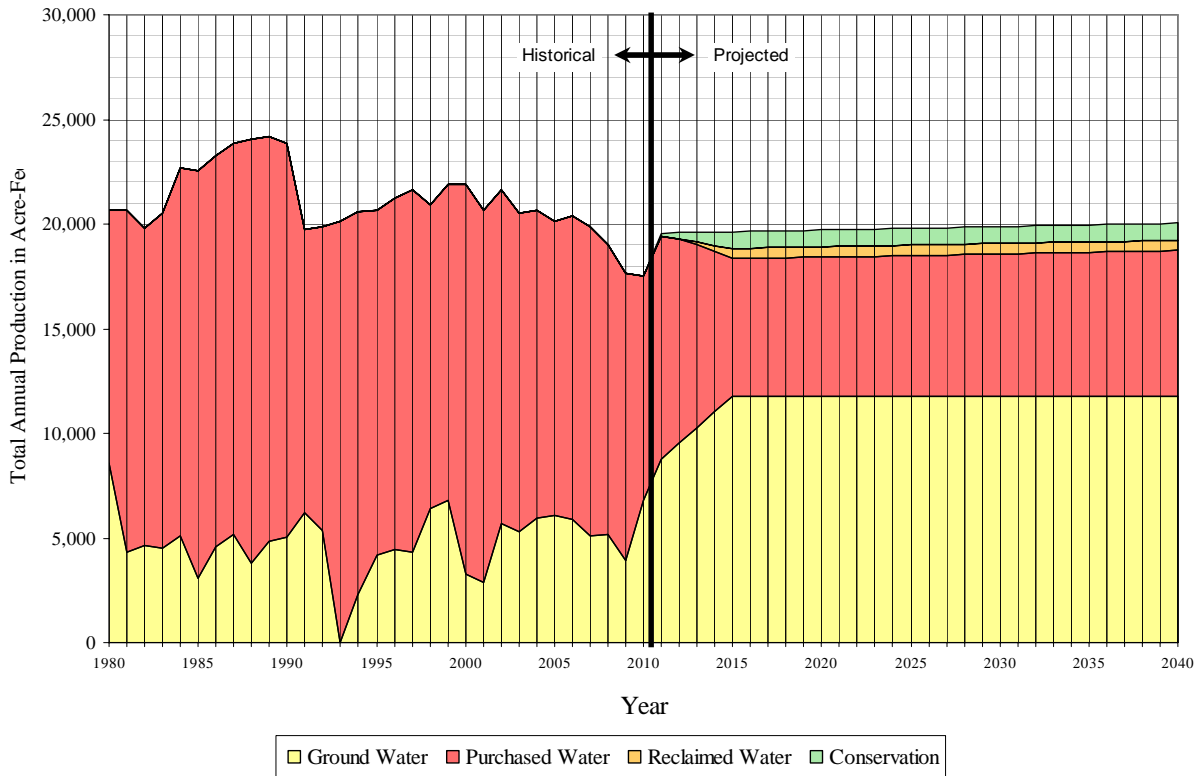
Water Use	2010	2015	2020	2025	2030	2035	2040
Sales to Other Agencies	-	-	-	-	-	-	-
Saline barriers	-	-	-	-	-	-	-
Groundwater recharge	-	-	-	-	-	-	-
Conjunctive use	-	-	-	-	-	-	-
Raw water	-	-	-	-	-	-	-
Recycled	-	500	500	500	500	500	500
Unaccounted-for system losses	424	978	981	983	985	987	989
<b>Total</b>	424	1,478	1,481	1,483	1,485	1,487	1,489

Actual and projected water use through 2040 is shown in Table 3.4-2. The values represent the total target demand projection based on SBx7-7 gpcd targets, including recycled water and unaccounted for water.

	2005 (Actual)	2010 (Actual)	2015	2020	2025	2030	2035	2040
<b>Water Use</b>	21,314	17,007	18,798	18,875	18,953	19,071	19,149	19,226

Figure 3.4-1 shows the planned sources of supply based on these demands through 2040. At this time only groundwater and conservation are included as sources of supply. Cal Water’s efforts to secure alternative supplies are discussed in the following section.

Figure 3.4-1: Historical & Projected Sources





## 4 System Supplies

### 4.1 Water Sources

The water supply for the customers of the East Los Angeles District is a combination of imported purchased water and groundwater. The projected water supply sources and volumes are summarized in Table 4.1-1.

<b>Water Supply Sources</b>	<b>2010 Actual</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>
<b>CBMWD-Purchased Water</b>	10,704	6,564	6,641	6,720	6,797	6,875	6,952
<b>Cal Water Groundwater Wells</b>	6,800	11,774	11,774	11,774	11,774	11,774	11,774
<b>Allowed Groundwater Carryover</b>	-	-	-	-	-	-	-
<b>Transfers – Active Leases</b>	(7,000)	-	-	-	-	-	-
<b>Drought Banked Groundwater*</b>	2,697	2,697	2,697	2,697	2,697	2,697	2,697
<b>Recycled Water (projected use)</b>	-	500	500	500	500	500	500
<b>Desalination</b>	-	-	-	-	-	-	-
<b>Total</b>	<b>17,504</b>	<b>18,838</b>	<b>18,915</b>	<b>18,994</b>	<b>19,071</b>	<b>19,149</b>	<b>19,226</b>

**\*Banked groundwater is not included in total water supplies.**

Cal Water's allowed pumping allocation (APA) of 11,774 AFY is set at 80 percent of the adjudicated right, which is based on the safe yield of the groundwater basin. This is normally referred to as the Allowed Pumping Allocation (APA). However, Cal Water does not currently have the ability to produce and deliver this quantity and normally produces between 3,000-6,000 AFY of groundwater. The remaining groundwater is either sold to other entities or left for basin recharge. A portion, up to 20 percent of the unused APA can also be carried over into the following year. Cal Water intends to construct new wells and maximize groundwater production in the future. Once Cal Water's groundwater production reaches the APA, carryover will no longer be available.

Cal Water maintains several short term water lease agreements with various municipalities and private companies. Under these agreements Cal Water leases the right to produce a portion of its APA so that it does not go unused. There is a total of 7,000 AF leased in East Los Angeles through 2010. When Cal Water begins producing its full adjudicated right these leases will not be required. The East Los Angeles District also has 2,697 AF of previously stored water in a special drought carryover groundwater bank. This supply can be accessed for one time use or sale and will not be available again. The banked water will most likely be saved until a drought when surface water supplies are reduced.

The recycled water listed in Table 4.1-1 is the projected demand from this source. Cal Water will begin serving recycled water in its service area in 2011 and has a maximum projected demand of approximately 800 AFY.

The remaining supply not provided by groundwater or recycled water will come from imported water purchased from Central Basin Municipal Water District (CBMWD). The amount available is discussed further in the following section.

## 4.2 Purchased Water

Purchased imported water currently satisfies approximately 70 percent of the District's water requirements. The East Los Angeles District purchases imported water from the CBMWD, one of the twenty-seven member agencies of the Metropolitan Water District of Southern California (MWD). MWD imports water through either the Colorado River Aqueduct, which is owned by MWD, or the California Aqueduct, a facility of the State Water Project, which is owned and operated by the California Department of Water Resources. CBMWD serves as the regional water wholesaler.

Cal Water signed a purchase agreement with CBMWD effective January 1, 2008 which lasts for a period of five years and has a base allocation of 19,533 AFY. The agreement has a tiered pricing structure so that 17,580 AFY is available at the Tier 1 price and the remaining 1,953 AFY of base allocation is available at the Tier 2 price. Under terms of the agreement Cal Water will purchase a minimum of 58,599 AF during the length of the contract. This was calculated as 60 percent of the base allocation over five years. A copy of the purchase agreement is included in Appendix H.

The reliability of MWD's imported water supply from the SWP has been seriously impacted by the recent Wanger Decision that limits pumping in the Delta. Pumping restrictions have been implemented, at least temporarily, because of the negative impact of pumping on Delta Smelt populations, which are protected under the California Endangered Species Act. The restrictions will be in place from late December through June and could reduce available supply from this source by up to 30 percent. This level of reduction will limit CBMWD's ability to deliver normal amounts to each of its retail customers, especially in dry or consecutive dry years. Delta pumping restrictions due to Delta Smelt and other emerging species of concern are expected to last for at least several years.

Delivery of imported water is made through three CBMWD service connections to the MWD distribution feeder network. The total rated capacity of these three service connections is 22,500 gallons per minute (gpm), which if operated at full capacity, could deliver 32.4 mgd.

In-Lieu Seasonal Storage currently remains a valid economic incentive program, but purchases of this class of water do not count toward the Purchase Commitment. Shift Seasonal Storage and Emergency service classifications were eliminated. Seasonal Storage Service is a classification for water that is available for delivery during the winter

(October through April) in years of adequate supply. Monthly certification is required to receive this reduced-price Seasonal Storage Service.

To qualify for Seasonal Storage Service water rates, a purveyor must reduce the demand for supplemental water from MWD in the summer months (May to September) and shift production of groundwater from winter to summer. The baseline production ratio between local groundwater supply and total demand verifies that this shift has been accomplished; in which case, the Seasonal Storage Service is considered Shift. If the purveyor instead retires the water rights and purchases additional MWD water, then it is considered In-Lieu Seasonal Storage.

This program benefits MWD by reducing the summer peak flows that were beginning to tax MWD's treatment facilities and distribution system, and enables MWD to maximize water importation during the winter when surplus flows are abundant in the areas of origin. However, in 2002 when the Water replenishment District eliminated the in-lieu rebate for the portion of the Central Basin where the East Los Angeles District is located, the economic viability of the Interruptible Seasonal Storage Program changed. As a result Cal Water stopped participating. With the current drought MWD called for an interruption in this supply.

The volumes of imported water from CBMWD shown in Table 4.2-1 are what Cal Water expects to need to meet customer demand.

<b>Wholesale Source</b>	<b>Contracted Volume</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>
Central Basin Municipal Water District	19,533	6,564	6,641	6,720	6,797	6,875	6,952

### 4.3 Surface Water

The East Los Angeles District does not impound or divert surface water as a means to meet supply requirements. Cal Water does not have any surface water rights in the area. However, surface water is the source for the purchased water imported through MWD.

### 4.4 Groundwater

The District has sufficient groundwater production rights (Table 3.4-1) to supply over 50 percent of the projected 2040 annual demand. However, in prior years, the operational plan for managing the District's water supply had been structured to coordinate with the existing regional conjunctive-use programs. These programs reduced the immediate overall cost of water and assured adequate reserves for use in future drought periods. These programs were modified effective July 1, 2002 and Cal Water's East Los Angeles District is no longer eligible to participate.

<b>Basin Name</b>	<b>Adjudicated Right - AFY</b>
Central Basin Municipal Water District	14,717
<b>Total</b>	<b>14,717</b>

Groundwater extracted from the Central Basin's Lynwood and Silverado aquifers satisfies about 30 percent of the District's water demand. Other aquifers may be used depending on the depth of perforations in specific wells. The East Los Angeles District has 20 wells, 12 of which are active. The active wells have a capacity to produce 6,230 GPM or 8.97 mgd. This daily production capacity represents 50 Percent of the ten-year average annual daily demand. If operated non-stop daily, this pumping capacity could produce 10,049 acre feet per year, or about half of the total annual demand for the District. The amount of groundwater pumped and projected to be pumped is shown in the following tables.

The amount of groundwater pumped over the last five years is shown in Table 4.4-2.

<b>Basin Name</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Central Basin	5,908	5,126	5,166	3,934	6,800
<b>% of Total Water Supply</b>	29%	26%	27%	22%	39%

The projected amount of groundwater pumping is shown in Table 4.4-3.

<b>Basin Name</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>
Central Basin	11,774	11,774	11,774	11,774	11,774	11,774
<b>% of Total Water Supply</b>	60%	60%	59%	59%	59%	59%

The Central Basin is an adjudicated groundwater basin with a total annual Allowed Pumping Allocation (APA) of 217,367 acre-feet. This APA is set at 80 percent of the adjudicated rights established under the judgment. This limitation was imposed on all basin pumpers due to the historically severe overdraft condition of the basin. The judgment permits an annual carry-over of up to 20 percent of the APA and permits over-extraction of up to 20 percent provided the over-extraction is off-set by next year's APA or future leases. As a result, annual allowable extractions vary as the allowable carry-over amount fluctuates. The judgment contains provisions for an exchange pool and for the leasing or transfer of adjudicated rights between parties of the judgment.

The East Los Angeles District exercises an annual adjudicated right of 14,717 AF, which has been limited under the judgment to an Allowed Pumping Allocation of 11,774 AF or 80 percent of the adjudicated right. Cal Water has become more active in leasing its annual unused water rights.

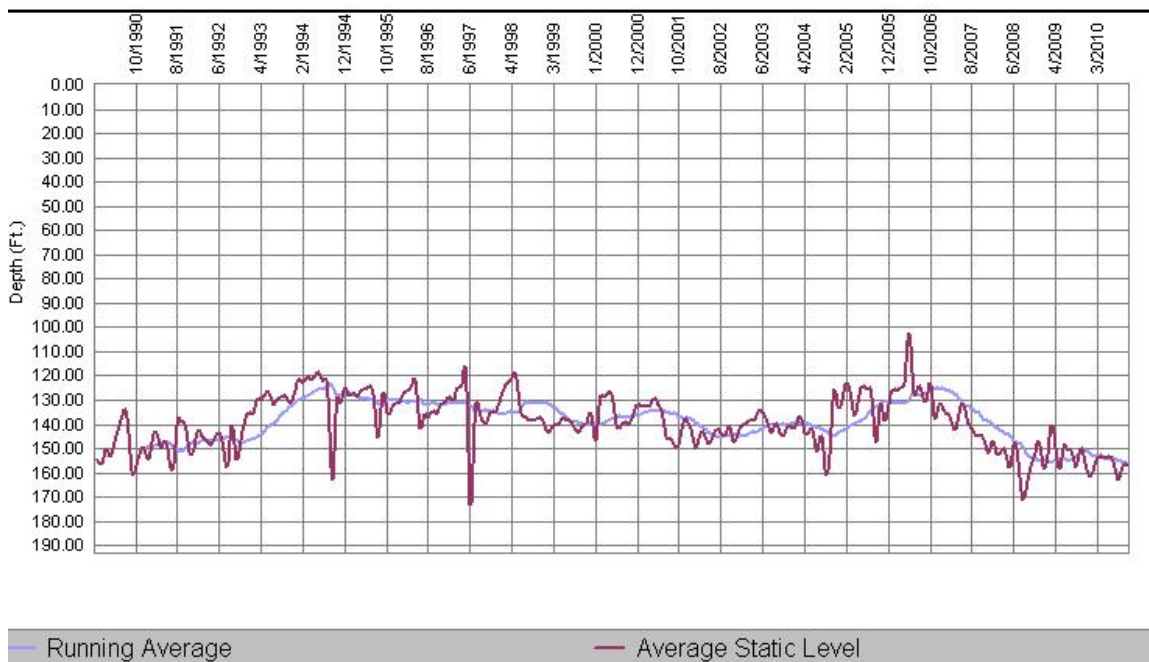
Because the District participated in the In-Lieu Replenishment Program, and because of water quality and production issues, the District has not produced its full adjudicated rights in any year during the past ten years. All water not produced by the District is either leased for production by others or it is left to storage in groundwater aquifers which helps to replenish the basin.

The Department of Water Resources of the State of California (DWR) is the designated Watermaster for the Central Basin Adjudication and, in that capacity, accounts for all groundwater in the basin reporting annually on groundwater production and related groundwater-use transactions. DWR’s Groundwater Bulletin 118 is included in Appendix D, which describes the basin in more depth.

The Department of Water Resources' Annual Summary of Watermaster Service reports the groundwater status in the basin. This summary includes figures depicting lines of equal water level elevation in the fall and spring of each year, lines of equal change in water level, and charts showing historical fluctuation of water level elevation in wells throughout the basin. These references clearly indicate that, since the reduction in pumping began in 1962 followed by the final adjudication in 1965, groundwater levels in the Central Basin have risen as much as one hundred feet. However, groundwater elevations in the pressure area close to the coast remain below sea level, requiring the maintenance of seawater intrusion barriers and continued replenishment operations. Due to management of the basin, groundwater levels have remained stable, with minor fluctuations resulting from climatic variation, as shown in Figure 4.4-1. Data for the last several years indicate that increased pumping has occurred in the basin as imported supplies were diminished due to drought conditions.

Figure 4.4-1: District Well Level Average (Static)

District: EAST LOS ANGELES For All Years As Of: 2/3/2011



Seawater intrusion has been a concern in the Central Basin since the late 1940s. The intense uncontrolled pumping of groundwater during the 40s and 50s created an overdraft in the basin that lowered the water level to as much as 100 feet below sea level. The threat of losing the basin to salt water prompted the formation of the CBMWD and its annexation to the Metropolitan Water District of Southern California. CBMWD is responsible for the acquisition of supplemental water supplies. The installation of the Alamitos Barrier in Long Beach provides protection against sea water intrusion in the Central Basin. The Los Angeles County Department of Public Works operates this barrier while the Water Replenishment District purchases the water used in the facility.

The Water Replenishment District of Southern California (WRDSC) is a public agency responsible for eliminating annual overdraft, reducing historical overdraft in both the Central and West Coast Basins, and protecting these basins from seawater intrusion or other contamination. In addition, the WRDSC manages various groundwater quality cleanup programs. To finance its designated responsibilities the WRDSC levies a Replenishment Assessment on every acre-foot of groundwater produced in the Central and West Coast Basins.

Except for the capture and recharge of stormwater runoff, which is funded by the Los Angeles County Department of Public Works as part of a long standing inter-agency agreement, all other water used for replenishing the groundwater of the Central and West Coast Basins is funded by the WRDSC through the Replenishment Assessment. The principle mechanism for recharge in the Central Basin is through percolation of water applied to surface spreading ponds in the Montebello Forebay. Injection of water into the seawater intrusion barriers and in-lieu replenishment contributes to this effort. The sources of water used for percolation include imported water purchased through CBMWD, recycled water purchased from the Los Angeles County Sanitation District, and storm runoff flowing down the Rio Hondo and San Gabriel Rivers.

#### 4.4.1 Basin Boundaries and Hydrology

The following description and additional details of the basin are given in the DWR's Groundwater Bulletin 118, see Appendix D<sup>5</sup>:

The Central Subbasin occupies a large portion of the southeastern part of the Coastal Plain of Los Angeles Groundwater Basin. This subbasin is commonly referred to as the Central Basin and is bounded on the north by a surface divide called the La Brea High, and on the northeast and east by emergent less permeable Tertiary rocks of the Elysian, Repetto, Merced, and Puente Hills. The southeast boundary between Central Basin and the Orange County Groundwater Basin roughly follows Coyote Creek, which is a regional drainage province boundary. The southwest boundary is formed by the Newport Inglewood fault system and the associated folded rocks of the Newport Inglewood uplift.

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<sup>5</sup> California's Ground Water Bulletin 118, 2003; San Francisco Hydrologic Region; Livermore Valley Groundwater Basin; Groundwater Basin Number: 2-10

The Los Angeles and San Gabriel Rivers drain inland basins and pass across the surface of the Central Basin on their way to the Pacific Ocean.

#### **4.4.2 Groundwater Management Plan**

As the regional groundwater management agency for two of the most utilized groundwater basins in the state of California, the WRD plays an integral role in overall water resource management in southern Los Angeles County. The WRD manages groundwater for nearly four million residents in 43 cities of southern Los Angeles County. The 420 square mile service area uses about 250,000 acre-feet of groundwater per year, which equates to nearly 40 percent of the total demand for water. The WRD ensures that a reliable supply of high quality groundwater is available through its clean water projects, water supply programs, and effective management principles. A copy of the 2003 WRD Strategic Plan is included as Appendix J.

### **4.5 Recycled Water**

The recycling of wastewater offers several potential benefits to Cal Water and its customers. Perhaps the greatest of these benefits is to help maintain a sustainable groundwater supply either through direct recharge, or by reducing potable supply needs by utilizing recycled water for appropriate uses (e.g., landscape, irrigation) now being served by potable water. The potential amount of recycled water that can be produced is proportional to the amount of wastewater that is generated by the District, and is discussed in the following sections.

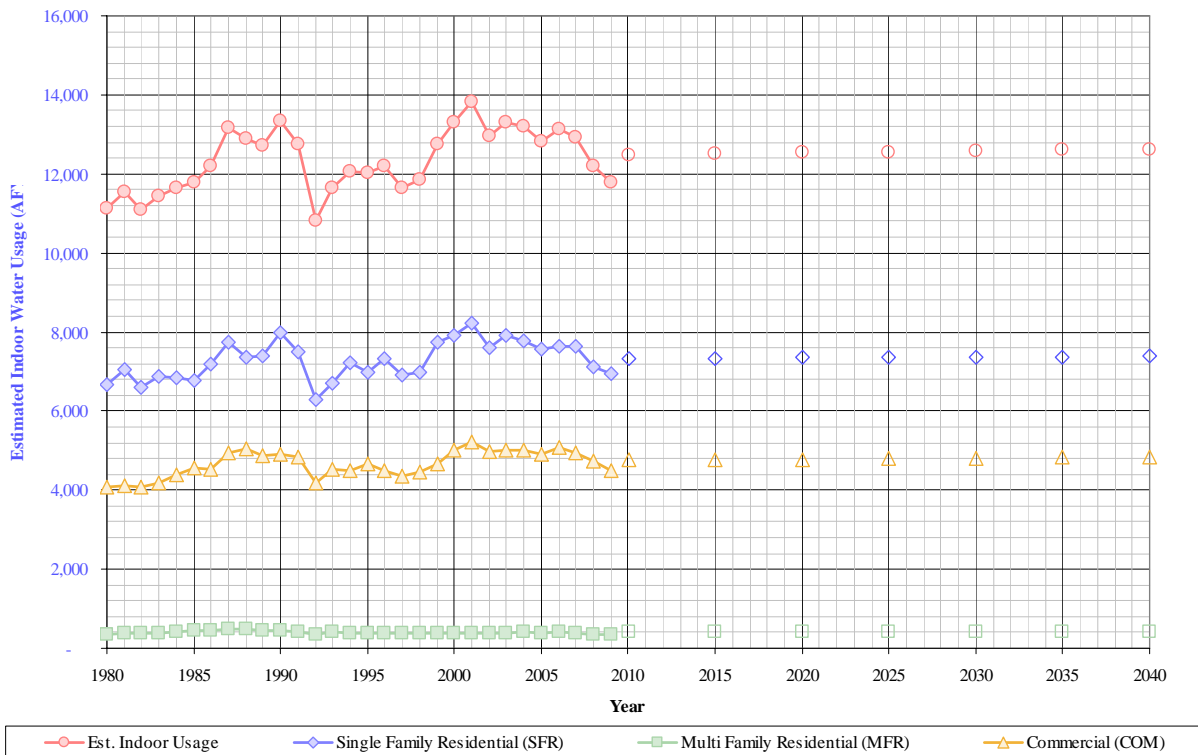
#### **4.5.1 Wastewater Collection**

The sanitation agencies serving the East Los Angeles District are the Sanitation Districts of Los Angeles County (LACSD) #2 & #23, who participate in the joint outfall system operated by Sanitation Districts of Los Angeles County (SDLAC). This system serves 71 cities using over 1,000 miles of 15" or larger trunk sewer mains and six waste-water plants. Five of these plants are Water Reclamation Plants that produce tertiary treated effluent that exceeds drinking water quality. This recycled water supply is intensely used in regions where it is produced, including the Central Basin where it has been used for groundwater recharge for nearly 50 years. In that time more than 1.5MAF of this recycled water has been used as a source of replenishment water in Central Basin. The CBMWD has aggressively worked to develop distribution facilities from the Los Coyotes Water Reclamation Plant and the San Jose Creek Water Reclamation Plant in order to promote irrigation and industrial use of recycled water.

#### **4.5.2 Estimated Wastewater Generated**

Estimates for the District's wastewater quantity since 1980 are shown in Figure 3.5-1 and were calculated by annualizing 90 percent of January water use in the Cal Water's service area. The future quantity of waste generation is based on a linear equation of the historical estimates.

Figure 4.5-1: Estimated District Annual Wastewater Generated



According to the LACSD, 37.2 percent of the wastewater produced in its service area is recycled. It would be inappropriate to apply this value to the total estimated wastewater produced in East Los Angeles District to provide an estimate of the amount of treated wastewater that reused or is discharged through the Joint Water Pollution Control Plant into the Pacific Ocean since the majority of the recycled water is generated from sources that are upstream of Central Basin. Therefore, since Cal Water does not have sufficient data to determine the percent of eventual reuse of the wastewater generated in the District, we have assumed that it is all being discharged in to the Ocean. Projected wastewater quantities for the district are presented in five-year increments to the year 2040 in Table 4.5-1.

Method of Disposal	Treatment Level	2010	2015	2020	2025	2030	2035	2040
Discharged to Ocean	Tertiary	12,486	12,509	12,533	12,557	12,581	12,605	12,629

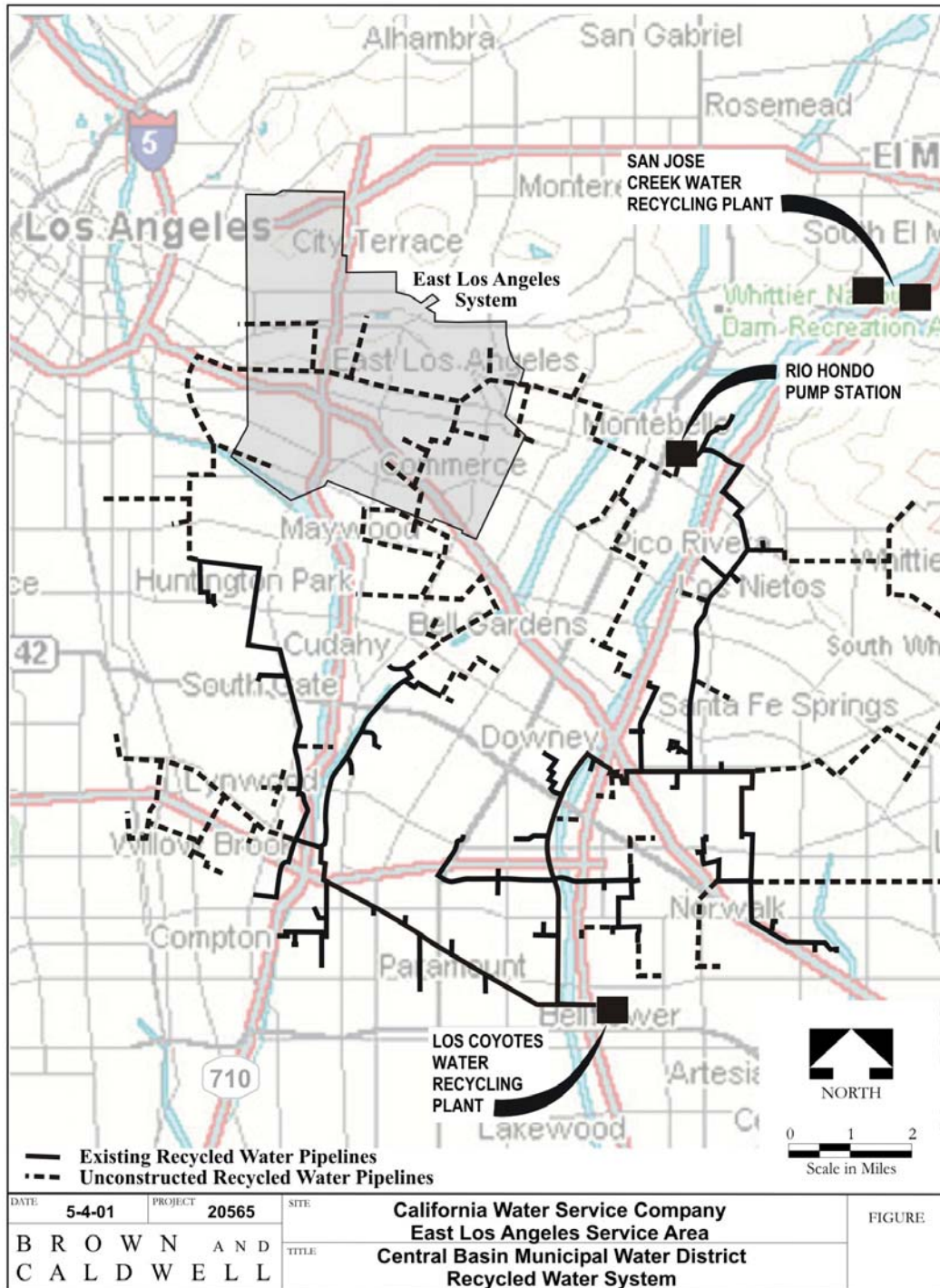
### 4.5.3 Potential Water Recycling

CBMWD has been developing an extensive network of transmission mains for the distribution of recycled water throughout the basin. Two additional phases are being planned for the existing recycled water system. East Los Angeles District and other neighboring water systems will be included in the second phase and is being planned for the next five years.

Cal Water began serving recycled water in its service area in 2010. Reclaimed water is received from CBMWD as part of CBMWD's Central Basin Recycled Water Project (CBRWP). The CBRWP serves reclaimed water to more than 210 industrial, commercial, and landscape irrigation sites throughout southeast Los Angeles County including South Gate and Norwalk.

The main features of the proposed piping system for distributing the recycled wastewater to Cal Water’s East Los Angeles service area are shown on Figure 4.5-2<sup>4</sup>.

Figure 4.5-2: Central Basin Recycled Water Project



<sup>4</sup> ASL Consulting Engineers. 2000. CBMWD Water Recycling Program Master Plan, Draft Submittal. January 18, 2000.

CBRWP consists of two interconnected recycled water distribution systems (the E. Thornton Ibbetson Century Recycled Water Project, and the Esteban Torres Rio Hondo Recycled Water Project), as well as three pump stations. A new 4 million gallon storage facility at the Rio Hondo Pump Station in Pico Rivera has been brought on-line and has replaced the Santa Fe Springs Reservoir. Currently, the CBRWP distributes about 3.6 mgd of recycled water to its network of commercial, industrial, and landscape irrigation uses.

Recent estimates by CBMWD identified economically feasible recycled water users with an estimated average annual demand of 1,700 AF. These users are located in the Commerce, Montebello and East Los Angeles service areas. Of these, only 800 AF of demand is in East Los Angeles. However, Cal water estimates that only 500 AF of this total amount will be developed in the near future. Cal Water would be the sole retail provider of recycled water within the district's service area.

**Table 4.5-2: Recycled Water - Potential Future Use-AFY (Table 23)**

User Type	Description	Feasibility	2015	2020	2025	2030	2035	2040
Landscape irrigation	Parks, Schools, etc.	Yes	500	500	500	500	500	500
Total			500	500	500	500	500	500

According to LACSD, 31.7 percent of its reclaimed water is reused. Of this amount 44.3 percent is used for groundwater recharge. Other uses include landscape irrigation (19.1%), agricultural irrigation (13.4%), industrial processes (9.3%), and recreational impoundments and wildlife habitat maintenance (13.9%).

The CBMWD is responsible for determining the technical and economic feasibility of supplying recycled water to the East Los Angeles service area. The CBMWD is also responsible for encouraging and optimizing the use of recycled water in the East Los Angeles service area. Extension of recycled water lines within the East Los Angeles service area is a responsibility of the CBMWD. Cal Water has not implemented any incentive programs to encourage recycled water use because they do not own and operate the wastewater system.

#### 4.6 Desalinated Water

Because of the saline barriers and recharge efforts of the Water Replenishment District of Southern California (WRDSC) and CBMWD, the presence of salt water intrusion is not a significant threat to groundwater quality in the East Los Angeles District. Because of this, and because of its distance from the ocean, desalination is unlikely to be developed as a source of supply in East Los Angeles.

#### **4.7 Transfer or Exchange Opportunities**

The lease or purchase of additional Adjudicated Water Rights could be utilized to achieve increased supply reliability and availability. Obtaining additional adjudicated rights would further increase the savings available to the District as compared to MWD water. However, at this time the District does not have sufficient production capacity to fully utilize all of its existing adjudicated right. Cal Water maintains several short term leases with local municipalities and private companies for the right to use this excess groundwater supply. As more wells are constructed in East Los Angeles, Cal Water will be able to produce a larger portion of its adjudicated right, and these leases will not be required.

#### **4.8 Water Supply Projects**

The viability of future supplies is contingent upon how these supplies influence or are affected by several critical conditions. These conditions include operational feasibility and reliability, supply reliability, economic incentive, economic effect on customers, and regional supply ramifications.

For an alternate water strategy to be acceptable, it must be feasible and add to the overall reliability of the distribution system. The East Los Angeles District no longer has enough well capacity to produce all of its adjudicated rights in a given year. The distribution system has the capacity to deliver the current and future demands of the District's customers. Therefore, additional groundwater pumping facilities are required to meet demand and maintain required pressures. Developing additional production capacity can decrease the amount of money spent to purchase water and provide greater reliability during shortages. The cost of constructing facilities to provide additional production capacity increases as more facilities are constructed; and, at some point, the revenue requirements to finance this construction exceed the savings generated by the added capacity.

There are conditions that complicate the placement of wells in the Central Basin. For the most part aquifers below the East Los Angeles District are shallow, narrow, and highly mineralized. These same aquifers are deeper and wider and charged with better quality water east of existing district wells; however, this region is outside the district. If highly mineralized water is encountered during well development, increased costs for the installation of additional facilities may be incurred. Subsequently, additional property and equipment may be required driving up the total water cost.

It is Cal Water's objective to provide facilities sufficient to maintain adequate production capacity in order to properly exercise the District's annual adjudicated rights and to take full advantage of economic incentives that may be offered by MWD and WRDSC in the future.

The reliability of MWD's imported water supplies has deteriorated in recent years. Because of this deterioration, Metropolitan has implemented programs that provide

financial incentives for development of local supplies, seasonal use of imported supplies in a manner that maximizes importation into Southern California, storage of surplus imported supplies for future use, and restoration of the usability of contaminated local groundwater.

As a regulated utility, the expense of purchasing or producing water is passed directly through to the customer; a utility can only earn money on the investment made in the utility plant—the equipment and facilities needed to produce and deliver water. Cal Water is committed to pursuing alternatives that provide the lowest achievable water cost without burdening either the customers or Cal Water with unjustified and extravagant plant expenses.

Cal Water regularly evaluates and critiques the proposed water rates of regional water supply and management agencies. Cal Water was instrumental in developing and promoting the In-lieu Replenishment concept in the 1960s and today continues to work with regional water agencies to improve the programs that provide economic incentives and regional supply benefits.

As water rates change, projects that appear not to be cost effective today may become economically feasible in the future.

Any program that modifies the operational strategy of the District or requires the installation of additional facilities to enhance supply reliability must be evaluated prior to being implemented, to determine what impact that project will have on regional supply conditions. These ramifications are interrelated; impacting one will affect the others. Supply conditions include the following:

- ◆ The Central Basin is an adjudicated groundwater basin.
- ◆ Seawater intrusion barriers exist within the basin.
- ◆ The Central Basin Municipal Water District offers a reclamation program.
- ◆ Basin overdraft has caused declining groundwater levels.
- ◆ Shortages of available imported water supplies will become more frequent.

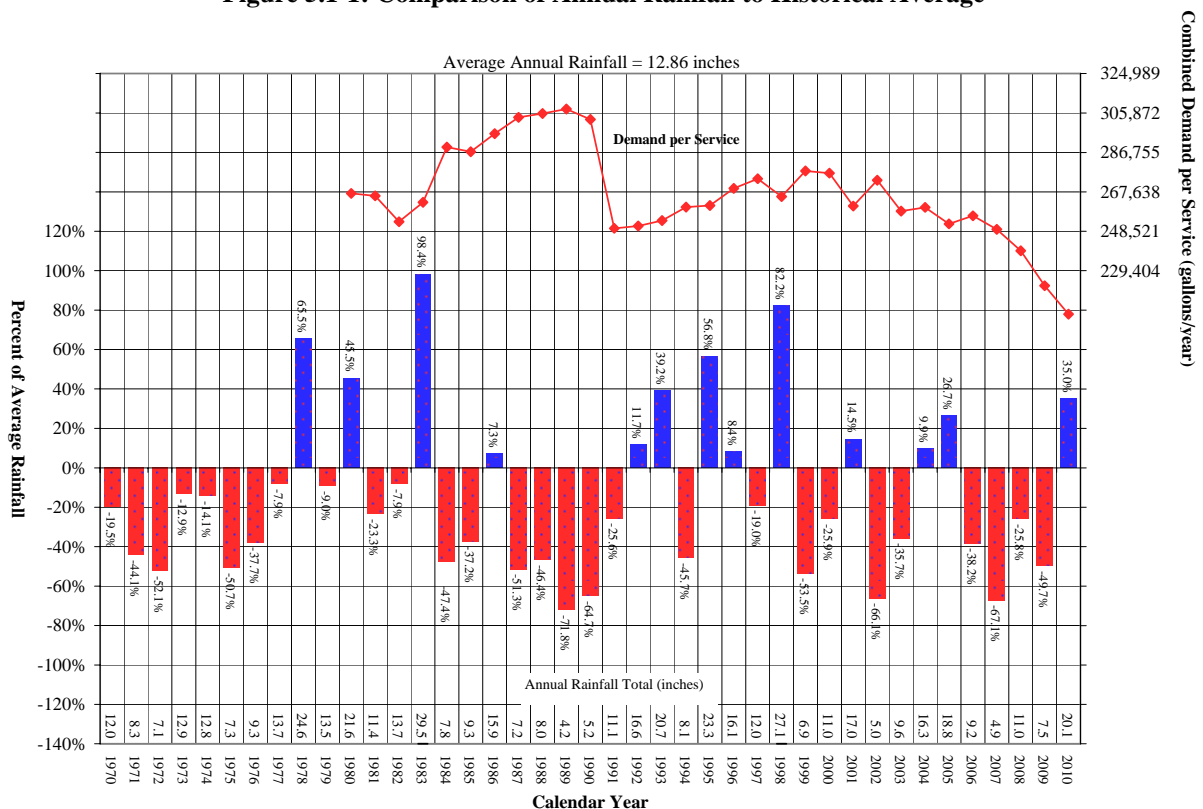


## 5 Water Supply Reliability and Water Shortage Contingency Planning

### 5.1 Water Supply Reliability

A chart comparing annual rainfall since 1970 to the historic average is shown in Figure 5.1-1. It also displays the demand per service values for each year since 1980. You can see that water use usually increases in the first years of a drought. Afterwards, conservation efforts are increased and the demand per service decreases accordingly. The statewide drought of 1987-1992 is a good example of these trends. The data shows that in the East Los Angeles area the drought began as far back as 1984, with a corresponding increase in demand per service in the early years and a drop as the drought persisted. Water use has remained below pre-drought levels since this time and has recently declined further in response to the drought conditions from 2007-2009.

Figure 5.1-1: Comparison of Annual Rainfall to Historical Average



## 5.2 Drought Planning

A normal hydrologic year occurred in 2004 when precipitation was approximately 11 percent above the historic average. The most recent driest year occurred in 2002 when the rainfall was approximately 66 percent below average (5.0 inches). This is taken as the single dry year shown in Table 5.2-1. The multiple dry-water years used are based on the statewide drought between 1988 and 1991.

Water Year Type	Base Year (s)
Average Water Year	2004
Single-Dry Water Year	2002
Multiple-Dry Water Years	1988-1991

Cal Water is not a regional water wholesaler and does not store water seasonally in reservoirs or other storage facilities. Therefore total runoff figures can not be used to determine supply reliability. Perhaps a better indication of annual variability would be the variation in customer demand between normal and single dry or multiple dry years. This can be seen in the overall average demand per service values for the District, as shown in Table 5.2-2. The data suggests a typical pattern where demand is gradually reduced as dry conditions persist. This reduction generally happens as a result of increased conservation requests by water providers and a general awareness of the problem by customers.

Table 5.2-2 shows the water supplies used in the normal, single dry, and multiple dry years described above. As a result of dry conditions and decreased storage, in 2008 MWD entered into Stage 2 of its Water Supply Allocation Plan, resulting in approximately 10 percent reduction in imported water allocations. Cal Water customers responded by reducing demand to meet these allocation targets. For the reasons described above, demand totals have been substituted for supply amounts in this analysis. If customers were not able to meet the reduction target, demand would increase, and penalty rates could be applied to these additional Cal Water purchases.

Average / Normal Water Year	Single Dry Water Year	Multiple Dry Water Years			
		Year 1	Year 2	Year 3	Year 4
260,101	273,255	255,993	249,467	239,039	222,123
% of Normal	105%	98%	96%	92%	85%

The supply reliability analysis reflects the assertion that the combination of the safe yield of groundwater in conjunction with MWD's available drought year supplies will be sufficient to provide the normal allotment of water to Cal Water's Dominguez District even in times of prolonged drought. For this analysis it is assumed that the current agreement for purchased water with WBMWD will be renewed and that normal amounts of recycled water will be available in all years.

Table 5.2-3 shows an estimate of the minimum water supply for the next three years. In this case 2010 was assumed to be a normal year and the supply for 2011-2013 will be reduced by the percentages listed in Table 5.2-2 for the multiple dry years. Groundwater and recycled water are drought proof supplies and will be available in their normal amounts in all years. The groundwater quantities shown in the table reflect Cal Water's expecting pumping capacity in these years. Cal Water intends to increase well capacity until the full adjudicated right can be utilized on an annual basis. The recycled water quantities shown are the expected demands from this source. Imported water will be used to make up the remaining supply and will vary according to customer demand.

<b>Table 5.2-3: Supply Reliability – Current Water Sources - AFY (Table 31)</b>				
<b>Water Supply Source</b>	<b>Average / Normal Water Year Water Supply</b>	<b>Multiple Dry Water Year Water Supply</b>		
		<b>2011</b>	<b>2012</b>	<b>2013</b>
Purchased	12,748	10,327	8,954	7,200
Recycled	0	0	0	100
Groundwater	6,800	8,774	9,524	10,274
Total	19,548	19,101	18,478	17,574
Percent of Normal Year	100%	98%	95%	90%

### 5.2.1 Normal-Year Comparison

The groundwater supply is available in all hydrologic year types and is limited to Cal Water's APA. Cal Water intends to maximize this source by 2013 by increasing well capacity. The current short term lease agreements would need to be terminated so that the full APA could be realized.

In addition to the normal groundwater supply Cal Water maintains 2,697 AF of banked groundwater in a drought storage account. This water was previously left unused in exchange for increased imported water deliveries and is available for one time extraction.

The Water Supply and Facilities Master Plan for the East Los Angeles District also estimates that there will be approximately 800 AFY of reclaimed water demand on an

annual basis. The recycled supply shown in Table 5.2-4 is the expected demand from this source and will be available in all hydrologic years.

The remaining supply will come from purchased water, which will vary depending on customer demand. The projected purchased water from CBMWD will be below the Tier I maximum of 17,580 AFY in normal hydrologic years.

According to MWD's 2010 Regional Urban Water Management Plan, sufficient supplies of imported water will be available in normal hydrologic years to meet all projected demands. For this analysis the normal demand is considered equal to the SBx7-7 target water demand projection plus recycled water use. Table 5.2-4 indicates that supplies will be reliable throughout the planning horizon of this UWMP and that no supply deficiencies are expected.

	2015	2020	2025	2030	2035	2040
Purchased water	6,524	6,601	6,679	6,797	6,875	6,952
Groundwater	11,774	11,774	11,774	11,774	11,774	11,774
Recycled water	500	500	500	500	500	500
Supply totals	18,798	18,875	18,953	19,071	19,149	19,226
Demand totals	18,798	18,875	18,953	19,071	19,149	19,226
Difference	0	0	0	0	0	0
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

## 5.2.2 Single Dry-Year Comparison

Cal Water plans to maximize the use of groundwater during single dry years. Because of basin adjudication, this source is expected to be fully available in single dry years. But as stated earlier, Cal Water is currently limited in this supply by well capacity. Cal Water will expect to make up the remainder of supply for the East Los Angeles District by purchasing water.

According to CBMWD's UWMP, normal amounts of purchased water will also be available during this time. Historically, CBMWD has increased its purchases of imported water from MWD during single dry years. However, the recent pumping restrictions in the Delta and the ongoing drought in the Colorado River Basin could result in operational changes for both the SWP and CVP in the future. For this comparison Cal Water has assumed that the single dry year was preceded by an average rainfall year and that there is average reservoir storage in both the SWP and CVP systems. Therefore Cal Water's full allotment of Tier I purchased water would be available to the East Los Angeles District. If the single dry year was preceded by a lower than average rainfall year, Cal

Water would likely expect reduced deliveries of imported water. This scenario is described further in the following section.

In general, and from operational records, the District's demand has shown to increase during a single-dry years as compared to normal years. The water demand increases due to maintenance of landscape and other high water uses that would normally be supplied by precipitation. The demand values shown in Table 5.2-5 were calculated by increasing the target demand projection in each year by the percentage listed for the single dry year in Table 5.2-2. Again, Cal Water assumes that the total supply available will equal the demand in all future years.

As noted in the previous section, groundwater and recycled water are expected to be available in normal amounts during all hydrologic years. And purchased water will provide the balance of supply to meet customer demands. The projected purchased water g water from CBMWD will be below the Tier I maximum in single dry hydrologic years. According to MWD's 2010 Regional Urban Water Management Plan, sufficient supplies of imported water will be available in single dry years to meet all projected demands. MWD asserts that the policies provided in the 2010 IRP update will insure this reliability. Therefore, the supply is 100 percent reliable in single dry years.

	2015	2020	2025	2030	2035	2040
Purchased water	7,475	7,555	7,638	7,761	7,843	7,924
Groundwater	11,774	11,774	11,774	11,774	11,774	11,774
Recycled water	500	500	500	500	500	500
Supply totals	19,749	19,829	19,912	20,035	20,117	20,198
Demand totals	19,749	19,829	19,912	20,035	20,117	20,198
Difference	0	0	0	0	0	0
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

### 5.2.3 Multiple Dry-Year Comparison

Groundwater and recycled water are expected to be available in normal amounts during all hydrologic years. Purchased water will provide the balance of supply to meet customer demands. The projected purchased water from WBMWD will be below the Tier I maximum in multiple-dry hydrologic years. According to MWD's 2010 Regional Urban Water Management Plan, sufficient supplies of imported water will be available in single dry years to meet all projected demands. MWD asserts that the policies provided in the 2010 IRP update will insure this reliability. Therefore, Cal Water expects the supply to be 100 percent reliable in single dry years. Again, no supply deficiency is expected.

Using the recent drought from 2006-2009 as an example, Cal Water expects MWD to begin its Water Supply Allocation Plan during future dry year periods. Although not reflected in the table below, reductions in demand will likely be necessary as the drought persists. As was seen over the last three years, Cal Water's customers have been able to respond and meet these target demand allocations.

As noted earlier, water demand generally increases early in a multiple dry year period then gradually decreases as the drought persists and customers respond to conservation messaging. This pattern is evident in Table 5.2-6 where demands at the beginning of each five year period are higher than in the normal year scenario, and demands decrease each year thereafter. The supplies and demands shown here are calculated by multiplying the target demand projection for that year by the percentages listed in Table 5.2-2 for the multiple dry year period, including recycled water.

		<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>
Multi-dry year first year supply	Purchased water	6,767	6,842	6,920	6,995	7,073
	Groundwater	11,774	11,774	11,774	11,774	11,774
	Recycled water	500	500	500	500	500
	Supply Totals	19,041	19,116	19,194	19,269	19,347
	Demand Totals	19,041	19,116	19,194	19,269	19,347
	Difference	0	0	0	0	0
	Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
	Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%
Multi-dry year second year supply	Purchased water	6,309	6,383	6,457	6,531	6,606
	Groundwater	11,774	11,774	11,774	11,774	11,774
	Recycled water	500	500	500	500	500
	Supply Totals	18,583	18,657	18,731	18,805	18,880
	Demand Totals	18,583	18,657	18,731	18,805	18,880
	Difference	0	0	0	0	0
	Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
	Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%
Multi-dry year third year supply	Purchased water	5,567	5,638	5,710	5,781	5,853
	Groundwater	11,774	11,774	11,774	11,774	11,774
	Recycled water	500	500	500	500	500
	Supply Totals	17,841	17,912	17,984	18,055	18,127
	Demand Totals	17,841	17,912	17,984	18,055	18,127
	Difference	0	0	0	0	0
	Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
	Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%

### 5.3 Factors Affecting Reliability of Supply

Although the historical climatic record shows that the demand can be met by the supply, other factors which may threaten the reliability of supply are listed in Table 5.3-1.

<b>Name of supply</b>	<b>Legal</b>	<b>Environmental</b>	<b>Water Quality</b>	<b>Climatic</b>
Groundwater	✓	✓	✓	✓
Purchased Water	✓	✓		✓

Although unlikely, any change to current agreements with CBMWD or WRDSC could negatively affect the future availability of supply. As discussed earlier the recent Wanger Decision limits the ability of the SWP and CVP to pump water from the Delta during critical supply times due to threatened fish species. At this time it is not known how long these restrictions will be in place or if other fish species will be protected under similar decisions. But environmental concerns such as these could result in a permanent reduction of available imported water supplies.

Before the Wanger Decision restrictions went into effect, short-term drought events were not thought to pose a serious threat to the reliability of supply in the East Los Angeles District. The buffer of excess imported supplies will not exist as long as Delta pumping is reduced. This decreases the reliability of supply for the East Los Angeles District. During drought events Cal Water may have to implement voluntary or mandatory rationing depending on the severity of the drought and availability of imported supplies.

Historically, Cal water has been able to meet all state and federal water quality regulations. Chemicals of concern in the East Los Angeles District include perchlorate, tetrachloroethylene (PCE), trichloroethylene (TCE), and 1,1-dichloroethylene (1,1DCE). Several Cal Water wells have been impacted by these chemicals. In each case, the wells were either taken out of service or wellhead treatment was applied. Currently, Cal Water is using wellhead treatment for perchlorate, PCE, TCE and 1,1DCE to ensure concentrations are below MCL for these chemicals. Similarly, wells that are heavily impacted by iron and manganese are either taken out of service or treatment facilities are added to remove these minerals. The presence of any of these or other emerging contaminants could negatively affect the reliability of supply. Water quality is discussed further in the following section.

## 5.4 Water Quality

The drinking water delivered to customers in the East Los Angeles District whether its source is groundwater or imported water, meets or surpasses all federal and state regulations. All drinking water standards are set by the U.S. Environmental Protection Agency under the authorization of the Federal Safe Drinking Water Act of 1974. In California, the state's Department of Public Health can either adopt the USEPA standard or set state standards that are more stringent than those set by the federal government.

There are two general types of drinking water standards, Primary and Secondary. Primary Standards are designed to protect public health by establishing Maximum Contamination Levels (MCL) for substances in water that may be harmful to humans. MCLs are established very conservatively for each contaminant and are generally based on health effects which may occur if a person were to drink three liters of the water per day for 70 years. Secondary Standards are based on the aesthetic qualities of the water such as taste, odor, color, and certain mineral content. These standards, established by the State of California, specify limits for substances that may affect consumer acceptance of the water.

The East Los Angeles water system is served by a combination of groundwater wells and treated surface water purchased from MWD. Three of MWD's treatment plants currently have ozone treatment. The remaining two treatment plants are currently under construction for ozone treatment. MWD has been fluoridating the water since October 2007. In MWD's 2010 Regional Urban Water Management Plan, their water quality concerns are salinity, perchlorate, TOC/bromide, nutrients (algae), arsenic, uranium, hexavalent chromium, NDMA, and PPCP (pharmaceuticals and personal care products).

The quality of the groundwater produced by the district's nine active wells tends to be highly mineralized. Several wells have exceeded the Secondary Standard for Iron and Manganese; though many of these wells have been taken out of service, all but one of the active wells with an exceedance for manganese have been placed back on-line following installation of additional treatment facilities. The remaining active well will be placed in standby status when the new groundwater well is completed in 2011. All of the groundwater wells are disinfected with chlorine and ammonia to form chloramines. Since this water system is disinfected with chloramines, nitrification is a possibility that is constantly monitored in the distribution system and in storage tanks.

Additionally, some wells have been tested to contain concentrations of volatile organic compounds, particularly tetrachloroethylene (PCE), trichloroethylene (TCE), and 1,1-dichloroethylene (1,1DCE) which exceeds the MCL for these substances. One well was found to contain perchlorate in excess of the MCL and had wellhead treatment installed. In all cases, these wells have been taken out of service or treated to remove the contaminant.

The presence of these contaminants in wells puts into question their potential availability if the concentration were to increase above the existing treatment capacity. Also of

concern is the potential loss of other wells due to contaminant migration. Additionally, there are several wells that contain low levels of PCE, TCE, and 1,1DCE. Production capacity from these wells could be jeopardized if the contaminant concentrations increase to greater than the MCLs. There are current discussions at EPA to lower the MCLs of these constituents. 1,4-dioxane was also found in almost all the groundwater wells above the Notification Level. The current wellhead treatment for PCE, TCE, and 1,1DCE is not effective at removing 1,4-dioxane. EPA is also looking into establishing a MCL for 1,4-dioxane.

## 5.5 Water Shortage Contingency Plan

This section contains an updated version of Cal Water's Water Shortage Contingency Plan. The Water Shortage Contingency Plan was last revised in response to the drought that California experienced between 1987 and 1992. The first version of the Plan was included in each subsequent UWMP update.

California's most recent drought event that began in the spring of 2006, coupled with the Delta pumping restrictions, brought increased awareness to the importance of drought preparedness. By the spring of 2008 it became apparent that several of Cal Water's service districts had the potential for water supply shortages and potential wholesaler allocations in the following year. In response, a Conservation/Supply Team was formed to develop a plan for addressing these potential issues. Through this process Cal Water learned valuable lessons and is better prepared for extended droughts or other long term water shortages. The results of this planning process are summarized in this Water Shortage Contingency Plan.

### 5.5.1 Water Shortage Contingency Plan Scope

The Water Shortage Contingency Plan is a unique document designed to address specific conditions that may occur from time to time in Cal Water's service areas. It can be triggered by several types of events but is primarily used as a response to longer term drought conditions. The Water Shortage Contingency Plan provides a comprehensive company-wide strategy for approaching water supply shortages that may last from several months to several years in duration.

Other triggers may include a partial loss of supply due to a mechanical failure of either Cal Water or wholesale supplier facilities resulting from natural disasters, chemical contamination, or other water quality issues. These two types of triggers are unlikely in larger districts where operational changes can more easily be made in one part of the system to overcome supply shortages in other parts of the system. However, in smaller isolated systems that rely heavily on one source of supply, a partial loss of this supply could necessitate the implementation of the Water Shortage Contingency Plan. Generally, this type of water supply shortage would not last as long as those caused by drought.

There are some important distinctions that should be made between the Water Shortage Contingency Plan and other programs and plans that Cal Water has for each district. Cal

Water also maintains an Emergency Response Plan (ERP) for each service area. The ERP is similar to the Water Shortage Contingency Plan in that it may include a loss of supply and inability to serve our customers with normal quantities of water. However, the ERP is designed to manage crises that occur more suddenly and are caused by events such as natural disasters, technological failures, chemical contamination, or national security emergencies.

The ERP provides a guide for district and general office personnel to follow in response to one of these emergencies. It includes the policies, responsibilities, and procedures to be used to protect public safety and includes the setup of an Emergency Operations Center and implementation of the Standardized Emergency Management System. The ERP also describes the necessary inter-jurisdictional coordination and provides the communications and notification plan to insure an efficient response to the emergency.

The ERP for each district was completed in 2004 in response to the Public Health and Safety and Bioterrorism and Response Preparedness Act (H.R. 3448) of 2002. They were then updated in May of 2008. Cal Water is planning to rewrite the ERPs in the next few years. These new Plans will include more detailed district-specific information and will be designed to be used as a manual for Cal Water personnel during emergency situations.

Cal Water is also in the process of developing Water Conservation Master Plans for each district. These Water Conservation Master Plans are different from the Water Shortage Contingency Plans in that they are designed to permanently reduce per capita water use by Cal Water's customers. The Water Conservation Master Plans are not associated with any short or long term loss of supply but will have the effect of making existing supplies last further into the future. In the short term, this will also provide increased supply reliability.

The water use targets selected by Cal Water for each service area are consistent with current regulations. In general, this will mean a reduction in per capita demand. Specific reductions will vary by service area and are contained in the service-area specific Water Conservation Master Plans. The annual level of funding for these programs will be determined through each General Rate Case filed with the California Public Utilities Commission (CPUC). The Water Conservation Master Plan will be discussed in more detail in Section 5 of this UWMP.

### **5.5.2 Water Conservation/Water Supply Team**

As mentioned earlier, Cal Water formed a Conservation/Supply Team in response to the water shortage conditions that were forecasted for 2009. This Team consisted of an interdepartmental group of personnel that guided the planning process for the company-wide response to the drought. Members of the Conservation/Supply Team include:

- Vice President of Regulatory and Corporate Communications

- Vice President of Customer Service, Human Resources, and Information Technology
- Director of Corporate Communications
- Director of Customer Service
- Conservation Manager
- Chief Engineer
- Water Resources Planning Supervisor
- Manager of Rates
- Manager of Operations
- Maintenance Manager
- Billing Manager
- Regulatory Accounting Manager
- Meter Operations Supervisor
- Support Staff

The Conservation/Supply Team held regular meetings to discuss strategies for all aspects of drought preparation such as water supply monitoring, public communications, wholesale and customer allocations, information technology improvements, and financial impacts. Additional staff participated as needed as the planning process progressed.

### **5.5.3 Water Supply Allocation Plan**

During the most recent drought several of Cal Water's districts were faced with the possibility of reduced wholesale allocations of imported water. If implemented, Cal Water would need to reduce its use of this supply proportionally in order to meet regional conservation targets and avoid wholesaler imposed penalties for overuse. Cal Water would have to request customers to reduce water use, usually to the same level as required by the wholesaler.

These reductions could either be voluntary or mandatory depending on the severity of the cutback required. If mandatory rationing is deemed necessary, retail customer allocations would need to be implemented. To determine the methodology used for customer allocations a cross-functional Water Allocation Team was formed. The Water Allocation Team consisted of a subset of the Conservation/Supply Team and was tasked with developing the details of how the allocation process would be handled internally by Cal Water. The Water Allocation Team reported back to the Conservation/Supply Team at the regular meetings.

The Water Allocation Team meetings resulted in a comprehensive strategy that is summarized in Cal Water's Water Supply Allocation Plan. The Water Supply Allocation Plan details the methodology used for determining customer allocations, conducting public communications, tracking water use, assessing penalties, and processing appeals.

The Water Supply Allocation Plan also outlines regulatory actions that must be taken in order to implement mandatory allocations. If it is determined that mandatory allocations

are likely to be necessary in a particular district Cal Water will file a Tier 2 advice letter with the CPUC that describes the need for mandatory allocations as well as our methodology and plan for implementation. A public hearing is required during the 30 days following this filing and all customers in the affected district will be notified of the hearing. If, after the 30 day period, it is determined that mandatory allocations are necessary, Cal Water will file a Tier 1 advice letter with the CPUC, which would make mandatory allocations effective 5 days following the filing.

Cal Water has the legal authority to implement mandatory allocations only after requesting from the CPUC that Tariff Rule 14.1, Mandatory Conservation Plan, be added to existing tariffs. *Section A. Conservation – Nonessential or Unauthorized Water Use* of Tariff Rule 14.1 identifies specific water use prohibitions. Prior to implementing mandatory allocations Cal Water will communicate details of the Plan to all customers.

#### **5.5.4 Allocation Methodology and Customer Information**

The Water Allocation Team’s methodology for determining customer allocations was decided through careful consideration of all available information. Throughout this process the Team tried to maintain fairness to all customers and develop a plan that was easy to understand and communicate. Secondary concerns included impacts to Cal Water such as the ease of implementation and revenue shortfalls.

Customer allocations will be calculated on a monthly basis for each “premise”, or customer location. The required cutback will be a percent reduction from prior use compared to baseline time period. The percentage reduction and baseline that Cal Water uses will be consistent with those used by the regional wholesaler. This will be done to ensure regional coordination between agencies and to offer a clear message to the public. In districts that do not have an imported supply and therefore no wholesaler, Cal Water will choose the percent reduction depending on the severity of the water shortage.

In most cases the percent reduction will be kept constant on an annual basis. It will be reviewed and adjusted as necessary in the spring of each year after the water supply picture becomes clear for the following dry season. In most districts Cal Water does not have direct control over long term storage of imported water and will rely on the California Department of Water Resources, U.S. Bureau of Reclamation, and regional water wholesalers to manage carryover storage between years. In some cases it may be necessary to adjust these percentages mid-year, if, for example, a district is not meeting its reduction target. The allocation period will end when Cal Water determines that the water shortage no longer exists and ample supplies are available on an ongoing basis.

A minimum allocation will be given to single-family residential customers whose monthly allocation would fall below a level that is considered necessary for health and safety. These minimum allocations will be calculated for each district and will include water for indoor consumption on a per capita basis and also a percentage of normal water for outdoor use such as landscape irrigation. Multi-family, commercial, industrial, government, and other service connection categories will not be subject to minimum allocations.

Cal Water will provide customers the opportunity to bank unused water that has been allocated in a billing period. A customer will bank their unused allocation in a given billing period which can then be used to offset a future month where the customer exceeds their allocation. There is no limit to the amount of water that can be banked by a customer. All banked water will expire once allocations are determined to no longer be needed.

As a deterrent to exceeding monthly allocations and to offset penalties that Cal Water may incur from wholesale agencies, a penalty rate will be applied to a customer's water use that is in excess of their allocation. This penalty rate will be charged in addition to the normal tiered rate for every unit (Ccf) above the allocation during a billing period.

If a customer feels that their allocation does not represent their current need, or to dispute penalties assessed to their account, customers can file an appeal with their local district. The appropriate personnel will review the appeal and issue a judgment in writing. The appeals will be reviewed according to rules outlined in the Water Supply Allocation Plan.

During a water shortage priority will be given to uses that promote public health and safety. These uses include residential indoor use and other sanitary purposes. On a case by case basis Cal Water will decide that certain services are seen as essential, such as hospitals, and may exempt the customer from allocations. The second priority will be given to commercial and industrial water use in an effort to minimize financial impacts to local businesses. And finally, outdoor irrigation has the lowest priority.

If Cal Water requests voluntary reductions, all customer categories will be asked to make the same percent reduction. If mandatory reductions are required, which in general means a reduction of greater than 15 percent, Cal Water may develop different demand reduction targets for each connection category. This will be done to enforce the priorities listed above and to ensure that the correct mix of targets are chosen so that the overall district demand reduction goal is reached.

### **5.5.5 Drought Stages**

Cal Water has developed a four stage approach to drought response that corresponds to specific levels of water supply shortage. At each higher stage Cal Water will become more aggressive in requiring water use reductions from its customers. The decision to enter a new stage will be made by careful consideration of a variety of factors including wholesale supply, availability of alternative supplies, time of year, and regional coordinated activities. These stages are designed to guide Cal Water personnel in making informed decisions during water shortages. A certain amount of flexibility is built in to the stages to allow for the unique characteristics of each water shortage event and the unique characteristics within each of Cal Water's districts. In each progressive stage the actions taken in earlier stages will be carried through to the next stage either at the same or at an increased intensity level, thereby becoming more restrictive.

When the water conditions in a district appear to warrant the activation of the Shortage Contingency Plan's Demand Reduction Stages, whether that be via implementing Stage 1, the movement from one Stage to a higher stage, the movement from a higher stage back down to a lower stage, or deactivating the use of Demand Reduction Stages altogether; the Water Conservation /Water Supply Team will consider those conditions at hand and prepare a recommendation on the appropriate action to be taken by the Company. The Team's recommendation will be presented by the Chief Engineer to the Vice President of Engineering and Water Quality. If the Vice President of Engineering and Water Quality concurs with the WC/WS Team recommendation, then he or she will take that recommendation to the President and Chief Executive Officer. The President & CEO will make the final determination as to whether or not the recommended action is to be taken by the Company.

If it is determined that the Company will implement or change the active Demand Reduction Stage for a given District, then a press release will be made in a manner that advises the customers served by that district of this determination. This press release will explain the desired outcome of the action to implement the appropriate stage. Upon making that determination Cal Water will immediately begin implementing the specific actions identified for the determined stage as outlined in the remainder of this section of the Shortage Contingency plan.

Stage 1 covers water shortages of up to 10 percent and can be used to address annual variations in precipitation and mild drought events that may last only a year or two. All reductions in Stage 1 are voluntary and impacts to customers are minimal. The actions to be taken by Cal Water in Stage 1 are listed in Table 5.5-1.

Table 5.5-1: Demand Reduction Stage 1 (Table 36)	
Stage	Water Supplier Actions
<p><b>1. Minimal</b></p> <p>5 to 10 percent Shortage</p> <p>Up to 10 percent Reduction Goal</p> <p>Voluntary Reductions</p>	<p><b>Cal Water will:</b></p> <p>Request voluntary customer conservation as described in CPUC Rule 14.1.</p> <p>Maintain an ongoing public information campaign.</p> <p>Maintain conservation kit distribution programs.</p> <p>Maintain school education programs.</p> <p>Maintain incentive programs for high efficiency devices.</p> <p>Coordinate drought response with wholesale suppliers and cities.</p> <p>Lobby cities for passage of drought ordinances.</p> <p>Discontinue system flushing except for water quality purposes.</p> <p>Request that restaurants serve water only on request.</p>

Stage 2 includes water shortages of between 10 and 20 percent. Stage 2 will be entered during prolonged water shortages of moderate severity such as those caused by a multi-year drought. Reduction methods can either be voluntary or mandatory depending on the severity of the water shortage. Allocations would likely be implemented when the shortage exceeds 15 percent. Customers will begin to notice moderate impacts to normal water use and companies may begin to have financial impacts. In Stage 2 Cal Water will intensify its conservation efforts by implementing the actions listed in Table 5.5-2. All actions from Stage 1 will be carried through or intensified in Stage 2.

Table 5.5-2: Demand Reduction Stage 2 (Table 36)	
Stage	Water Supplier Actions
<p><b>2. Moderate</b></p> <p>10 to 20 Percent Shortage</p> <p>Up to 20 Percent Reduction Goal</p> <p>Voluntary or Mandatory Reductions</p>	<p><b>Cal Water will:</b></p> <p>Increase or continue all actions from Stage 1.</p> <p>Implement communication plan with customers, cities, and wholesale suppliers.</p> <p>Request voluntary or mandatory customer reductions.</p> <p>File Schedule 14.1 with CPUC approval if necessary.</p> <p>Request memorandum account to track penalty rate proceeds and other drought related expenses.</p> <p>Lobby for implementation of drought ordinances.</p> <p>Monitor water use for compliance with reduction targets.</p>

Stage 3 represents a severe water shortage emergency with a reduction in supply of between 20 and 35 percent. This stage can be triggered by the most severe multi-year droughts, major failures in water production and distribution facilities, or by water quality concerns, especially in smaller isolated systems. A shortage of this magnitude may begin to seriously impact public health and safety, and cause significant financial hardships on local businesses. All reductions will be mandatory and customer allocations would be necessary. During Stage 3 Cal Water will take the following actions listed in Table 5.5-3, which includes all the actions from Stage 2.

<b>Table 5.5-3: Demand Reduction Stage 3 (Table 36)</b>	
<b>Stage</b>	<b>Water Supplier Actions</b>
<b>3. Severe</b>	<b>Cal Water will:</b>
20 to 35 Percent Shortage	Increase or continue all actions from previous stages. Implement mandatory conservation with CPUC approval.
Up to 35 Percent Reduction Goal	Install flow restrictors on repeat offenders. Require customers to have high efficiency devices before granting increased allocations.
Mandatory Reductions	Require participation in survey before granting an increased allocation.

Stage 4 is a critical water shortage emergency with a reduction of supply of at least 35 and potentially above 50 percent. This represents an exceptional crisis that could be caused only by the most severe multi-year drought, natural disaster, or catastrophic failure of major water supply infrastructure. Impacts to public health and safety would be significant. In Stage 4 Cal Water will take the additional actions listed in Table 5.5-4 while also continuing or increasing actions from Stage 3.

Table 5.5-4: Demand Reduction Stage 4 (Table 36)	
Stage	Water Supplier Actions
<p><b>4. Critical</b></p> <p>35 to 50+ Percent Shortage</p> <p>Up to and above a 50 percent Reduction Goal</p> <p>Mandatory Reductions</p>	<p><b>Cal Water will:</b></p> <p>Increase or continue all actions from previous stages.</p> <p>Discontinue service for repeat offenders.</p> <p>Monitor water use weekly for compliance with reduction targets.</p> <p>Prohibit potable water use for landscape irrigation.</p>

**5.5.6 Water Supply Conditions and Trigger Levels**

As described in section 3, the water supply for the East Los Angeles District is a mix of groundwater and imported water. Cal Water’s groundwater supply is limited to its APA of 11,774 AF. This value is based on the safe yield of the Central Basin and is fixed in both wet and drought years. Cal Water also has 2,697 AF of groundwater banked in a drought storage account that is available for one time use. During water shortages the East Los Angeles District will have access to this full entitlement, less any amount that has been leased to other agencies, private companies or individuals. Once the full pumping capacity is restored, a portion of this groundwater supply could be used to offset any reductions in imported water deliveries. Another contingency option during dry years would be to make the decision not to renew these short term leases, which would make more groundwater available to Cal Water if it is faced with wholesale allocations.

The Central and West Basin Judgment, which defined water rights in the basin, also allows for increased groundwater pumping in times of Declared Water Emergencies. These may occur as a result of a temporary shortage of MWD imported supplies or an inability for MWD to deliver imported water. The maximum amount available in the Central Basin for this purpose is 17,000 AF.

Cal Water's imported supply for the East Los Angeles District comes through the Central Basin Municipal Water District (CBMWD), which is a member agency of the Metropolitan Water District of Southern California (MWD). Cal Water's Water Shortage Allocation Plan will ultimately be triggered by actions within these agencies. Although Cal Water could decide to increase groundwater pumping to make up the difference in demand, except in unusual circumstances it will follow the lead of these agencies when deciding whether to implement the Water Shortage Allocation Plan. The percent shortage identified by MWD will determine which drought stage Cal Water enters into. These thresholds are shown in Table 5.5-5. The drought stages are discussed in more detail in the following section.

Stage	Percent Shortage
Stage 1	5 to 10% supply reduction
Stage 2	10 to 20% supply reduction
Stage 3	20 to 35% supply reduction
Stage 4	35 to 50% supply reduction

In April of each year, after the winter storm season, MWD will assess its available water supply and decide if it will request voluntary or mandatory reductions by its member agencies. MWD will judge the performance of CBMWD retailers as a whole and will only assess penalties to CBMWD if the retailers' collective use exceeds its allocation. These reduction targets will be passed along through CBMWD to Cal Water and from Cal Water to our customers. If necessary, the allocation period will begin on July 1<sup>st</sup> of the given year and will continue at least one year or until the availability of supplies warrants the lifting of water use restrictions.

### **5.5.7 Water Use Restriction Enforcement**

Because of its investor owned status Cal Water has limited authority to enforce water use restrictions unless Rule 14.1 is enacted through CPUC approval. Restrictions on water use prior to enacting Rule 14.1 must be regulated by ordinances passed by the local governments in each community served. Cal Water has worked with municipalities to pass ordinances and will continue this effort on an ongoing basis. Rule 14.1 contains a detailed list of the water use restrictions common to many of these ordinances, and is included as Appendix E of this UWMP.

In the East Los Angeles District the Cities of Montebello, Monterey Park, Vernon as well as the County of Los Angeles, have passed water conservation ordinances, which are included in Appendix E.

Cal Water maintains extensive water use records on individual metered customer accounts. These records are reviewed in the districts to identify potential water loss

problems. In order to protect itself against serious and unnecessary waste or misuse of water, Cal Water may meter any flat rate service and apply the regularly established meter rates where the customer continues to misuse or waste water beyond five days after Cal Water has given the customer written notice to remedy such practices.

During all stages of water shortages, production figures are reported to and monitored by the district manager. Consumption will be monitored through these daily production figures in the district for compliance with necessary reductions.

Cal Water, after one written warning, shall install a flow-restricting device on the service line of any customer observed by Cal Water personnel to be using water for any non-essential or unauthorized use defined in Section A. of Tariff Rule 14.1. Repeated violations of unauthorized water use will result in discontinuance of water service.

### 5.5.8 Analysis of Revenue and Expenditure Impacts

Cal Water is an investor-owned water utility and, as such, is regulated by the CPUC. On March 8, 1989, the Commission instituted an investigation to determine what actions should be taken to mitigate the effects of water shortages on the State's regulated utilities and their customers. In decision D. 90-07-067, effective July 18, 1990, the Commission authorized all utilities to establish memorandum accounts to track expenses and revenue shortfalls caused both by mandatory rationing and by voluntary conservation efforts. Subsequently, D. 90-08-55 required each class A utility (more than 10,000 connections) seeking to recover revenues from a drought memorandum account to submit; for Commission approval, a water management program that addresses long-term strategies for reducing water consumption. Utilities with approved water management programs were authorized to implement a surcharge to recover revenue shortfalls recorded in their drought memorandum accounts.

However, the Commission's Decision 94-02-043 dated February 16, 1994, states:

*10. Now that the drought is over, there is no need to track losses in sales due to residual conservation.*

*11. The procedures governing voluntary conservation memorandum accounts (see D.92-09-084) developed in this Drought Investigation will no longer be available to water companies as of the date of this order.*

*12. Procedures and remedies developed in the Drought Investigation that are not specifically authorized for use in the event of future drought in these Ordering Paragraphs will no longer be available to water companies as of the date of this order except upon filing and approval of a formal application.*

*(CPUC Decision 94-02-043, Findings of Fact, paragraphs 10-12)*

In 2008 the CPUC allowed for the creation of a Water Revenue Adjustment Mechanism (WRAM) and Modified Cost Balancing Accounts (MCBA). The goals of the WRAM and MCBA are to sever the relationship between sales and revenue to remove the disincentive to implement conservation rates and conservation programs especially in times of drought. WRAM and MCBA are designed to ensure that the utilities and

ratepayers are proportionally affected when conservation rates are implemented, so that neither party is harmed nor benefits. Because of these regulatory developments Cal Water expects to increase the implementation of conservation rates and conservation programs on a permanent basis.

During water supply shortages Cal Water would expect to see a reduction in revenue. The amount of this reduction would depend on the total amount of water being conserved and the price (tier rate) at which the cutbacks were made for each customer. In other words, the reduction would be roughly equivalent to the quantity charge for the amount of water saved. Cal Water would still receive its monthly service charge fees.

Cal Water has adequate reserves to overcome this short term reduction. These reductions in revenue would also be recovered through the WRAM and MCBA. Through the WRAM and MCBA Cal Water will be able to track its revenue impacts and expenditures during water shortages and recover these losses through the CPUC rate case process in future years. Because of these new mechanisms Cal Water is assured that it will have adequate reserves available to operate normally under water shortage conditions.

Expenditures will not increase due to a mild water shortage condition. Any expenditure made during this time will come out of the normal conservation budget that has been approved by the CPUC. Actions that may be taken include public information campaigns that draw attention to the shortage and steer customers towards our other conservation programs (toilet rebates, washing machine rebates, home audits, etc) that are available. These programs will be paid for by money that is already budgeted. Therefore no additional expenditures will take place. If the water shortage warrants mandatory allocations, Cal Water would need to file an advice letter with the CPUC to seek approval to implement mandatory allocations. This process would include securing any additional funding necessary for the administration of this program. Again, these costs would be recovered through the MCBA and WRAM.

### **5.5.9 Catastrophic Water Supply Interruption**

As mentioned earlier, Cal Water has an ERP in place that coordinates the overall company response to a disaster in any or all of its districts. In addition, the ERP requires each District to have a local disaster plan that coordinates emergency responses with other agencies in the area.

Cal Water also inspects its facilities annually for earthquake safety. To prevent loss of these facilities during an earthquake, auxiliary generators and improvements to the water storage facilities have been installed as part of Cal Water's annual budgeting and improvement process.

There are three emergency connections from the East Los Angeles District to neighboring water systems: one with Montebello Land and Water Company (6"), one with the South Montebello Irrigation District (8"), and one with City of Montebello (8"). These connections can be used to help offset the impact of the interruption in service to District

customers. Being two-way connections, they can also be used to supply either imported water or pumped groundwater from the East Los Angeles District to the adjoining water system.



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## 6 Water Demand Management

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### 6.1 Statewide Urban Water Demand Reduction Policies

As mentioned earlier, Cal Water is in the process of significantly expanding its conservation programs. Inter-related state-level policies and agreements aimed at reducing urban water use have provided much of the impetus for this change. The policies include: (1) recent decisions by the California Public Utilities Commission (CPUC) directing Class A and B water utilities to reduce per capita urban water demand; (2) state legislation mandating urban water suppliers to reduce per capita demand 20 percent by 2020; and (3) the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU). This section discusses these requirements, their relationship to one another, and their relationship to Cal Water's overall conservation strategy.

The CPUC's Decision 07-05-062 directed Class A and B water utilities to submit a plan to achieve a 5 percent reduction in average customer water use over each three-year rate cycle. This policy was refined under Decision 08-02-036, which established a water use reduction goal of 3 to 6 percent in per customer or service connection consumption every three years once a full conservation program, with price and non-price components, is in place. These decisions anticipated enactment of policies by the State legislature to reduce urban water use in California 20 percent by 2020.

SBx7-7 requires the state to achieve a 20 percent reduction in urban per capita water use by December 31, 2020. The state is required to make incremental progress toward this goal by reducing per capita water use by at least 10 percent on or before December 31, 2015. SBx7-7 requires each urban retail water supplier to develop interim and 2020 urban water use targets. Urban retail water suppliers will not be eligible for state water grants or loans unless they comply with SBx7-7's requirements.

There are three ways in which a water supplier can comply with the MOU. The first way is to implement a set of water conservation best management practices (BMPs) according to the requirements and schedules set forth in Exhibit 1 of the MOU. The second way, called Flex Track compliance, is to implement conservation programs expected to save an equivalent or greater volume of water than the BMPs. The third way, similar to SBx7-7, is to reduce per capita water use. Each of these compliance options is briefly described below.

Originally, the MOU established a set of BMPs that signatories agreed to implement in good faith. For each BMP, the MOU established the actions required by the water supplier (e.g. site surveys, fixture and appliance rebates, water use budgets, volumetric pricing and conservation rate designs), the implementation schedule, and the required level of effort (in the MOU this is referred to as the coverage requirement). Additionally, the MOU established the terms by which a water supplier could opt out of implementing a BMP.

BMPs are grouped into five categories. Two categories, Utility Operations and Education, are “Foundational BMPs” because they are considered to be essential water conservation activities by any utility and are adopted for implementation by all signatories to the MOU as ongoing practices with no time limits. The remaining BMPs are “Programmatic BMPs” and are organized into Residential, Commercial, Industrial, and Institutional (CII), and Landscape categories. Table 6.1-1 shows the BMPs by category. The requirements and coverage levels of each BMP are set forth in Exhibit 1 of the MOU. As of the date of this UWMP, Cal Water is in process of completing and submitting BMP reports to the CUWCC for the period 2009-2010. Submission was delayed due to delays in the CUWCC reporting forms being made available.

<b>Table 6.1-1: MOU Best Management Practices</b>	
<b>BMP Group</b>	<b>BMP Name</b>
1. Utility Operations Programs (F)	Conservation Coordinator
	Water Waste Prevention
	Wholesale Agency Assistance Programs
	Water Loss Control
	Metering & Volumetric Rates
	Retail Conservation Pricing
2. Education Programs (F)	Public Information Programs
	School Education Programs
3. Residential (P)	Residential Assistance Program
	Landscape Water Surveys
	High Efficiency Clothes Washer Program
	Watersense Toilet Program
4. Commercial, Industrial, Institutional (P)	Watersense Specifications for Residential Development
	Reduce baseline CII water use by 10% in 10 years
5. Landscape (P)	Large Landscape Water Budget Programs
	Large Landscape Water Surveys
F = Foundational BMP, P = Programmatic BMP	

Under Flex Track, a water supplier can estimate the expected water savings over the 10-year period 2009-2018 if it were to implement the programmatic BMPs in accordance with the MOU’s schedule, coverage, and exemption requirements, and then achieve these water savings through any combination of programs it desires. Thus, through the Flex Track compliance option, a water supplier agrees to save a certain volume of water using whatever it determines to be the best combination of programs. Because the savings target depends on the programmatic BMP coverage requirements, which in turn are functions of service area size and composition of demand, the volume of water to be saved under this compliance option must be calculated separately for each supplier. The methodologies and tools for water suppliers to implement these calculations are still being developed by the CUWCC.

Under the gpcd option, a water supplier can comply with the MOU by reducing its baseline gpcd by 18 percent by 2018. The baseline is the ten-year period 1997-2006. The MOU also establishes interim gpcd targets and the highest acceptable levels of water use deemed to be in compliance with this option. The MOU's gpcd option is similar to using Method 1 to set the SBx7-7 target, except that it uses a fixed baseline period and only runs through 2018. This compliance option may be difficult to achieve for Cal Water districts that are part of a regional alliance for purposes of SBx7-7 compliance because savings as a percent of demand will vary considerably among the districts in the alliance. It may also conflict with district-specific SBx7-7 targets set using method 3 (hydrologic region-based target). Because of these potential conflicts, this is not considered a viable MOU compliance option for Cal Water districts.

Cal Water plans to use Flex Track to comply with the MOU. This compliance option affords the most flexibility in selecting conservation programs suited to each Cal Water district and allows for more streamlined reporting. Because CUWCC tools for calculating a district's Flex Track savings target are not yet available, Cal Water developed its own target estimates for planning purposes. Cal Water will update these estimates as necessary following the release of the CUWCC Flex Track target calculator.

## 6.2 Conservation Master Plans

In an effort to address the statewide policies for urban water use reduction Cal Water developed Conservation Master Plans for each of its service districts. These Conservation Master Plans are designed to provide a framework for meeting these statewide policies and to chart a course for Cal Water's conservation programs over the next five years. The major tasks of the Conservation Master Plans include:

1. A complete review of State policies and development of a compliance strategy
2. Calculating all appropriate per capita targets
3. Determining water savings required from new programs
4. Performing an analysis of conservation programs
5. Developing a portfolio of conservation programs
6. Creating a plan for monitoring and update of Conservation Master Plans

Cal Water's Conservation Master Plans have a five year planning horizon and are designed to be updated in coordination with the UWMP for each district. The Conservation Master Plan for the East Los Angeles District is included in its entirety as Appendix G. A discussion of baseline and target water use can be found in Section 3 of this UWMP. A summary of the water savings requirements and program portfolio is summarized in the following section.

### 6.3 Water Savings Requirements

The differences between the unadjusted baseline demand (net of recycled water use), district-specific SBx7-7 target, and MOU Flex Track target are shown in Table 6.3-1. This shows the amount of water savings needed for SBx7-7 compliance, as well as the savings required for MOU compliance. Because average per capita water use in East Los Angeles District is already less than the 2015 target, the table shows a negative gross savings requirement of 904 AF. However, compliance with the MOU Flex Track target will require conservation program water savings of approximately 458 AF.

Table 6.3-1: SBx7-7 and MOU Gross Water Savings Requirements		
Gross Water Savings Required by 2015	SBx7-7	MOU Flex Track
2015 Unadjusted Baseline Demand	19,624 AF	19,624 AF
2015 Target Demand	20,528 AF	19,167 AF
<b>Gross Savings Requirement</b>	<b>-904 AF</b>	<b>458 AF</b>

As discussed earlier, because CUWCC tools for calculating a district's Flex Track savings target are not yet available, Cal Water developed its own target estimates for planning purposes. The targets are based on the expected water savings from cost-effective programmatic BMPs over the ten-year period 2009-2018. The coverage requirements for the programmatic BMPs were used to calculate the Flex Track targets. Expected water savings and cost-effectiveness were based on the conservation program specifications and avoided water supply costs. The supporting data and calculations are provided in Appendix G.

Because East Los Angeles District is part of a regional alliance, the amount of water savings needed for SBx7-7 compliance may turn out to be less than the amount shown in the table. Also, some of the reduction in baseline demand needed to achieve SBx7-7 and MOU compliance will come from efficiency codes, response to adjustments in rates, and savings from past program implementation. The remainder will need to come from new conservation program activity.

The unadjusted baseline demand described in Section 3 does not account for future changes in water demand due to the effects of plumbing fixture efficiency codes, changes in water rates, metering, and existing conservation programs. A portion of the gross savings requirements shown above are expected to come from these sources. The Conservation Master Plan includes an estimate of the volume of water saved as a result of these things. The results are used to adjust baseline demand so that the volume of water savings that will need to come from new conservation programs can be determined.

Two recent California laws are expected to accelerate the replacement of low efficiency plumbing fixtures – primarily toilets and showerheads – with higher efficiency alternatives.

- AB 715, passed in 2007, amended the California Building and Safety Code to require by January 1, 2014, that toilets sold or installed in California use no more than 1.28 gallons per flush. It also requires that urinals sold or installed use no more than 0.5 gallons per flush.
- SB 407, passed in 2009, amended the California Civil Code to require replacement of low efficiency plumbing fixtures with higher efficiency alternatives when a property undergoes alterations, improvements, or transfer. In the case of single-family residential properties, issuance of a certificate of final completion and occupancy or final permit approval by the local building department for building alterations or improvements will be conditional on the replacement of low efficiency plumbing fixtures beginning in 2014. Single-family property owners are required by law to replace any remaining non-compliant plumbing fixtures by no later than January 1, 2017. After this date, a seller or transferor of single-family residential real property must disclose in writing to the prospective purchaser or transferee whether the property includes any noncompliant plumbing fixtures. For multi-family and commercial properties non-compliant fixtures must be replaced by January 1, 2019. As with single-family properties, final permits or approvals for alterations or improvements are conditional on the replacement of low efficiency fixtures beginning in 2014.

The phase-in dates for AB 715 and SB 407 mean they will not greatly contribute to meeting the 2015 interim gpcd target under SBx7-7. But they will support meeting the 2020 target. Moreover, since the early 1990's, the sale and installation of toilets manufactured to flush more than 1.6 gallons, showerheads manufactured to have a flow capacity more than 2.5 gallons per minute, and interior faucets manufactured to emit more than 2.2 gallons per minute has been prohibited. These requirements will continue to improve the efficiency of plumbing fixtures in older residential and commercial buildings.

Water savings from expected rate adjustments in East Los Angeles District were also calculated. The estimates are based on inflation-adjusted changes in rates for 2011, 2012, and 2013, as contained in CPUC's proposed GRC decision. Short-run price elasticity estimates used to calculate potential changes in demand were drawn from the CUWCC's conservation rate guidebook.

In addition to savings from codes and rates, conservation activity occurring in 2009 and 2010 were also taken into account. The adjusted baseline demand and savings associated with code changes, rate changes, and existing conservation programs are shown in Table 6.3-2.

<b>Adjusted Baseline (AF)</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Unadjusted Baseline	19,561	19,576	19,592	19,609	19,624
Less Savings from					
Codes	58	112	164	213	275
Schedule Rate Increases	1	-10	-36	-63	-127
Existing Programs	33	33	33	26	18
<b>Adjusted Baseline Demand</b>	<b>19,469</b>	<b>19,440</b>	<b>19,431</b>	<b>19,433</b>	<b>19,458</b>
Per Capita (GPCD)	115	115	115	115	115

The amount of water savings required from new conservation programs is not the same for SBx7-7 and MOU Flex Track compliance. In the case of SBx7-7, the objective is to reduce 2015 per capita water use at least to the target of 121 gpcd, and any expected savings from codes, rates, and existing conservation programs can be credited toward meeting this goal. This is not the case for MOU Flex Track compliance, where the objective is to implement conservation programs that would save at least as much as the Flex Track target. Unlike SBx7-7, water savings from codes and rates cannot be credited against the Flex Track target. Only savings from existing conservation programs can be deducted.

Savings required from new conservation programs to meet SBx7-7 and MOU Flex Track compliance requirements are summarized in Table 6.3-3. In the case of SBx7-7, 2015 potable demand, after accounting for codes, scheduled changes in rates, and 2009-10 conservation program activity, is projected to be 1,071 AF less than required for SBx7-7 compliance. Hence no additional conservation is expected to be needed for SBx7-7 compliance in 2015.

In the case of MOU Flex Track Compliance, water savings from conservation programs implemented in 2009 and 2010 are expected to generate about 18 AF of savings in 2015. Thus conservation programs implemented over the period 2011-2015 will need to save an additional 439 AF by 2015 for East Los Angeles District to be in compliance with the MOU.

<b>2015 Net Savings Requirement (AF)</b>	<b>SBx7-7</b>	<b>MOU Flex Track</b>
<b>Gross Savings Requirement</b>	<b>-904</b>	<b>458</b>
Less		
Savings from codes	275	NA
Savings from rates	-127	NA
Savings from existing programs	<u>18</u>	<u>18</u>
Subtotal Expected Savings	167	18
<b>Savings Required from New Programs<sup>1</sup></b>	<b>-1,071</b>	<b>439</b>

<sup>1</sup>Negative net savings indicates that no new program savings required for compliance

## 6.4 Conservation Program Analysis

Cal Water engaged in a detailed, multi-step process to identify the best mix of programs to achieve the required savings. The process began with an inclusive range of potential program concepts. These concepts were qualitatively analyzed to eliminate those that were clearly inappropriate for each district and thereby narrow the analytical focus to those remaining programs that were potentially appropriate. Those programs were then subjected to detailed quantitative analysis. This Section describes the steps of the analytical process for East Los Angeles District, and the programs that emerged as potential components of a portfolio of programs for the district.

As a result of an exhaustive search of the literature, consultation with experts in the field, knowledge of conservation programming by other water suppliers, and the experience of the project team, a total of more than 75 conservation program concepts were defined. At this point in the process, the goal was to be as inclusive as possible. The list was therefore intentionally large to ensure that all possible program concepts were considered. Cal Water did not want to risk inadvertently excluding a program from consideration.

Once the range of program concepts was defined, the next step was to subject each program concept to a careful district-specific qualitative screen, the objective of which was to eliminate those program concepts that were clearly inappropriate.

A preliminary quantitative analysis was conducted on the programs that passed the qualitative screen. To do that, estimates were made of key savings and cost parameters for each of the programs. Where applicable, these estimates were based on prior Cal Water experience with similar programs. In the absence of such experience, the experience of other water suppliers, the expertise of the project team, consultation with national experts, and published figures, where available, were relied upon. In particular, estimates developed by the California Urban Water Conservation Council and the Alliance for Water Efficiency were utilized where such estimates were available. While in most cases, the savings assumptions for a program do not vary across districts, for several programs, they do due to district-specific characteristics of household size, climate, etc. Other than meter installation, program cost assumptions are uniform across districts, although in some cases, cost sharing with other water utilities reduce Cal Water's share.

Using the results of the qualitative screening and preliminary quantitative analysis, Cal Water identified five core programs that it would run in every district over the next five years. In addition to the core programs, an additional set of non-core programs was selected. Unlike core programs, Cal Water may not offer non-core programs in every district or in every year. Implementation of non-core programs will depend on whether additional water savings are required for SBx7-7 compliance, MOU compliance, or to help address local supply constraints. Table 6.4-1 lists all Cal Water core and non-core conservation programs.

<b>Table 6.4-1: Cal Water Conservation Programs</b>		
<b>Program Name</b>	<b>Description</b>	<b>Target Market</b>
<b>CORE PROGRAMS</b>		
Rebate/Vouchers for toilets, urinals, and clothes washers	Provide customer rebates for high-efficiency toilets, urinals, and clothes washers	All customer segments
Residential Surveys	Provide residential surveys to low-income customers, high-bill customers, and upon customer request or as pre-screen for participation in direct install programs	All residential market segments
Residential Showerhead/Water Conservation Kit Distribution	Provide residential showerhead/water conservation kits to customers upon request, as part of residential surveys, and as part of school education curriculum	All residential market segments
Pop-Up Nozzle Irrigation System Distribution	Offer high-efficiency pop-up irrigation nozzles through customer vouchers or direct install.	All customer segments
Public Information/Education	Provide conservation messaging via radio, bill inserts, direct mail, and other appropriate methods. Provide schools with age appropriate educational materials and activities. Continue sponsorship of Disney Planet Challenge program.	All customer segments
<b>NON-CORE PROGRAMS</b>		
Toilet/Urinal Direct Install Program	Offer direct installation programs for replacement of non-HE toilets and urinals	All customer segments
Smart Irrigation Controller Contractor Incentives	Offer contractor incentives for installation of smart irrigation controllers	All customer segments
Large Landscape Water Use Reports	Expand existing Cal Water Large Landscape Water Use Report Program providing large landscape customers with monthly water use reports and budgets	Non residential customers with significant landscape water use and potential savings
Large Landscape Surveys & Irrigation System Incentives	Provide surveys and irrigation system upgrade financial incentives to large landscape customers participating in the Large Landscape Water Use Reports programs and other targeted customers	Non residential customers with significant landscape water use and potential savings
Food Industry Rebates/Vouchers	Offer customer/dealer/distributor rebates/vouchers for high-efficiency dishwashers, food steamers, ice machines, and pre-rinse spray valves	Food and drink establishments, institutional food service providers
Cooling Tower Retrofits	Offer customer/dealer/distributor rebates/vouchers of cooling tower retrofits	Non-residential market segments with significant HVAC water use
Industrial Process Audits and Retrofit Incentives	Offer engineering audits/surveys and financial incentives for process water efficiency improvement	Non-residential market segments with significant industrial process water uses

Core and non-core programs were then subjected to a detailed benefit cost analysis, the results of which were used to inform program portfolio development discussed in the next section. The first step in this process was to refine and finalize the savings and cost specifications of each program. The program savings and cost assumptions enable the calculation of program benefits and costs to the utility and its ratepayers, and comparisons of these costs in the form of benefit-cost ratios. The tool used to do this comparison was a simplified version of the Alliance for Water Efficiency Tracking Tool. Following are descriptions of how the model calculates and compares conservation program benefits and costs.

## 6.5 Conservation Program Portfolio

This section presents the recommended conservation program portfolio for the East Los Angeles District. The program analysis results described in the previous section provided the starting point for portfolio development. The next step was to determine the annual levels of program activity needed to, at minimum, meet East Los Angeles District's water savings targets and local demand management goals. Several considerations informed these decisions, including budgetary constraints included in the current GRC decision, Cal Water conservation program administrative capacity, program market and water savings potential, and the program benefit-cost results. For the East Los Angeles District, the programs selected and the activity level of each are shown in Table 6.5-1.

Table 6.5-1: Recommended Program Levels					
Program	Recommended Annual Activity Levels				
	2011	2012	2013	2014	2015
<b>CORE PROGRAMS</b>					
Rebates/Vouchers					
Toilets	690	690	690	920	920
Clothes Washers	440	440	440	130	130
Urinals	0	0	0	0	0
Customer Surveys/Audits	320	320	320	110	110
Conservation Kit Distribution	470	470	470	470	470
Pop-Up Nozzle Distribution	5,600	5,600	5,600	5,600	5,600
<b>NON-CORE PROGRAMS</b>					
Direct Install Toilets/Urinals	470	470	470	2,100	2,100
Smart Irr. Controller Vendor Incentives	40	40	40	410	410
Large Landscape Water Use Reports	60	60	60	100	100
Large Landscape Surveys/Incentives	90	90	90	90	90
Commercial Kitchen Rebates/Vouchers	0	0	0	40	40
Cooling Tower/Process Water Retrofit Incentives	0	0	0	0	0

The program levels for 2011-2013 reflect the funding level approved in Cal Water's most recent General Rate Case (GRC) settlement with the CPUC. Program levels for 2014 and 2015 will be dependent on the outcome of Cal Water's 2014-2016 GRC filing.

Table 6.5-2 shows projected water savings associated with the programs listed above. The projected savings exceed the 2015 SBx7-7 and MOU Flex Track targets.

<b>Table 6.5-2: Projected Water Savings by Program</b>					
<b>Program</b>	<b>Annual Water Savings (AF)</b>				
	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>CORE PROGRAMS</b>					
Rebates/Vouchers					
Toilets	20.4	40.0	58.8	83.9	108.1
Clothes Washers	9.1	17.8	26.1	28.8	31.4
Urinals	0.0	0.0	0.0	0.0	0.0
Customer Surveys/Audits	12.1	23.0	32.8	33.7	34.6
Conservation Kit Distribution	7.3	13.6	19.3	24.2	28.6
Pop-Up Nozzle Distribution	22.4	44.8	67.2	89.6	112.0
<b>Subtotal Core Programs</b>	<b>71.2</b>	<b>139.1</b>	<b>204.1</b>	<b>260.3</b>	<b>314.6</b>
<b>NON-CORE PROGRAMS</b>					
Direct Install Toilets/Urinals	15.8	30.9	45.5	108.2	168.5
Smart Irr. Controller Vendor Incentives	2.0	4.0	6.1	18.7	31.3
Large Landscape Water Use Reports	5.6	5.6	5.6	9.9	9.9
Large Landscape Surveys/Incentives	14.7	29.3	44.0	58.6	73.3
Commercial Kitchen Rebates/Vouchers	0.0	0.0	0.0	11.7	23.4
Cooling Tower/Process Water Retrofit Incentives	0.0	0.0	0.0	0.0	0.0
<b>Subtotal Non-Core Programs</b>	<b>38.0</b>	<b>69.8</b>	<b>101.0</b>	<b>207.1</b>	<b>306.4</b>
<b>Total Core and Non-Core Program Savings</b>	<b>109.2</b>	<b>209.0</b>	<b>305.1</b>	<b>467.4</b>	<b>621.0</b>

Based on the above analysis the district is projected to achieve its district-specific 2015 and 2020 SBx7-7 compliance target in 2015 through a combination of passive and active savings. Appendix C, Worksheet 24, includes a comparison of conservation savings required to meet SBx7-7 compliance targets to the savings expected as a result of existing and planned programs, including passive savings due to code changes.

For the purpose of this analysis it is assumed that GPCD will remain flat from 2015 through 2020. However, it is likely that additional programs will be offered as part of Cal Water's ongoing conservation program. The activity level of each future program will depend on Cal Water's success in obtaining the necessary funding through the CPUC rate case process.

As part of the Conservation Master Plan development, one page program summaries, or fact sheets, were developed for each recommended program. These fact sheets provide a quick reference summarizing program design and marketing, expected level of customer participation, projected water savings, and proposed program expenditure for the period 2011 – 2015. The fact sheets for the East Los Angeles District are included in Appendix G.



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## 7 Climate Change

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### 7.1 Introduction

Investigating climate change brings the prospect of examining both model-predicted outcomes and unforeseen changes to the environment. These changes may physically affect the water districts that Cal Water serves. Climate change does not just mean a change in average temperature within any particular region, but a change in the climatic conditions that creates or results in an increase in extreme weather events. These potential changes include a more variable climate with risks of extreme climate events that are more severe than those in the recent hydrologic record, in addition to sea level rise, a hotter and drier climate, and the likelihood that more of the uplands precipitation will fall as rain and not as snow.

### 7.2 Strategy

Cal Water intends to prepare a Climate Assessment Report in 2013 that will examine the regional impacts on water supply for each of its 24 service areas. This report will review any supply changes that may occur due to climate change and will outline mitigation and adaptation methods to meet the needs of the District's service area. The following section, adapted from DWR's *Guidebook to Assist Water Suppliers to Prepare a 2010 Urban Water Management Plan*, provides a range of topics to be examined in Cal Water's Climate Assessment Report.

Responding to climate change generally takes two forms: mitigation and adaptation. Mitigation is taking steps to reduce our contribution to the causes of climate change by reducing greenhouse gas (GHG) emissions. Adaptation is the process of responding to the effects of climate change by modifying our systems and behaviors to function in a warmer climate. Regardless if climate change is manmade or a result of natural climate cycles, investigating mitigation and adaptive methods to better manage possible uncertainties in climatic changes will have more immediate benefits such as: cutting carbon emissions, reducing energy usage, possible economic development at the local level, and financial savings for Cal Water and the ratepayers.

#### Mitigation

In the water sector, climate change mitigation is generally achieved by reducing energy use, becoming more efficient with energy use, and/or substituting fossil fuel based energy sources for renewable energy sources. Water requires energy to move, treat, use, and discharge, thus water conservation is energy conservation. One possible mitigation method is to calculate conserved energy and GHGs not-emitted as water conservation targets are being met.

#### Adaptation

Climate change means more than just hotter days. Continued warming of the climate system may have considerable impact on the operation of Cal Water Districts, even if indirectly. For example, snow in the Sierra Nevada provides 65 percent of California's water supply. Predictions indicate that by 2050 the Sierra snowpack will be significantly

reduced. Much of the lost snow will fall as rain, which flows quickly down the mountains during winter and cannot be stored in the current water system for use during the summer. This change in water runoff may severely impact groundwater recharge and other water supply networks. The climate is also expected to become more variable, bringing more droughts and floods. Cal Water districts will have to adapt to these new and more variable conditions.

### **7.3 Potential Climate Change Effects**

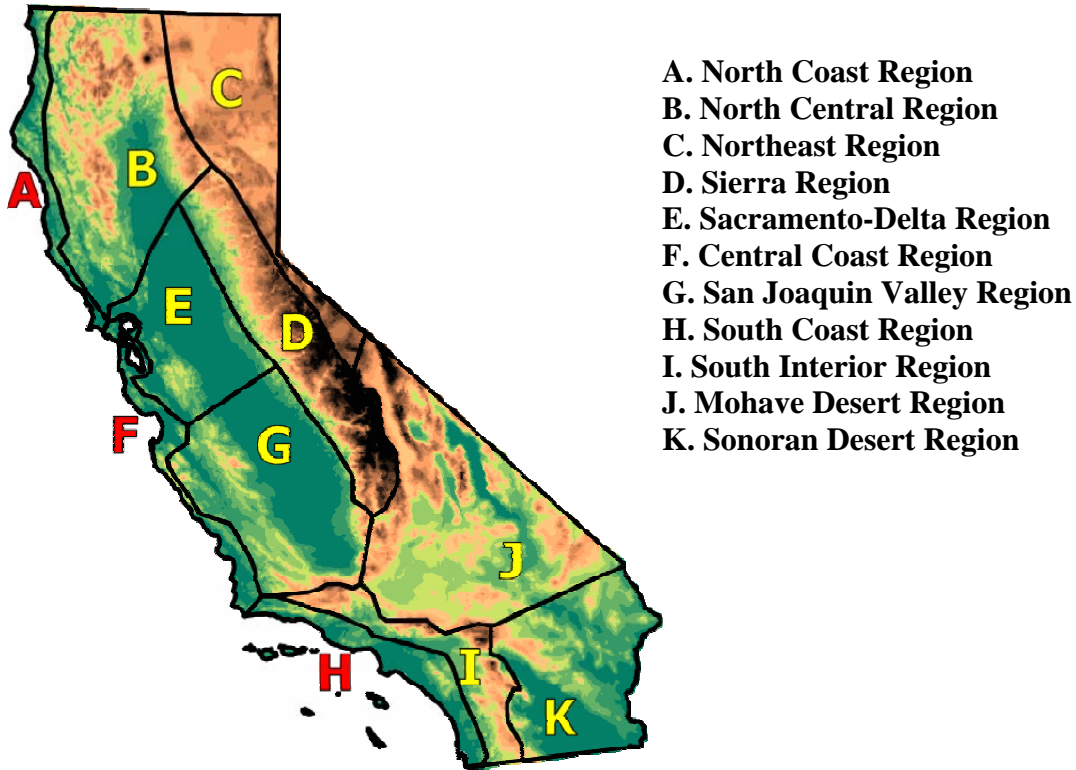
Even in the near term of the next 20 years, DWR has outlined potential climate change effects to water supplies, water demand, sea level, and the occurrence and severity of natural disasters. Some of these potential changes are presented below. Cal Water will investigate the following climate change and the effects on Cal Water's Districts:

- **Water Demand** — Hotter days and nights, as well as a longer irrigation season, will increase landscaping water needs, and power plants and industrial processes will have increased cooling water needs.
- **Water Supply and Quality** — Reduced snowpack, shifting spring runoff to earlier in the year, increased potential for algal bloom, and increased potential for seawater intrusion—each has the potential to impact water supply and water quality.
- **Sea Level Rise** — It is expected that sea level will continue to rise, resulting in near shore ocean changes such as stronger storm surges, more forceful wave energy, and more extreme tides. This will also affect levee stability in low-lying areas and increase flooding.
- **Disaster** — Disasters are expected to become more frequent as climate change brings increased climate variability, resulting in more extreme droughts and floods. This will challenge water supplier operations in several ways as wildfires are expected to become larger and hotter, droughts will become deeper and longer, and floods can become larger and more frequent.

### **7.4 Historical Climate Data Summary**

The National Climatic Data Center (NCDC) has established 11 climate regions within California. Each region is defined by unique characteristics, and is shown in Figure 7.4-1.

Figure 7.4-1: The Climate Regions of California<sup>6</sup>



Cal Water has water service districts in 7 out of 11 of the climate regions. The East Los Angeles District is located in the South Coast Region, as listed in Table 7.4-1.

Table 7.4-1: Cal Water Districts Sorted by Climate Region	
Climate Region	Cal Water Districts in Each Climate Region
North Coast Region	None
North Central Region	Chico-Hamilton City, Redwood Valley
Northeast Region	None
Sierra Region	Kern River Valley
Sacramento-Delta Region	Dixon, Livermore, Marysville, Oroville, Stockton, Willows
Central Coast Region	Bear Gulch, Los Altos, Mid- Peninsula, Salinas, South San Francisco
San Joaquin Valley Region	Bakersfield, King City, Selma, Visalia
South Coast Region	Dominguez, <b>East LA</b> , Hermosa-Redondo, Palos Verdes, Westlake
South Interior Region	None
Mojave Desert Region	Antelope Valley
Sonoran Desert Region	None

<sup>6</sup> [http://www.wrcc.dri.edu/monitor/cal-mon/frames\\_versionSTATIONS.html](http://www.wrcc.dri.edu/monitor/cal-mon/frames_versionSTATIONS.html)

The region has experience a general warming trend as indicated by the maximum, minimum, and mean temperature departure from average. Since 1895 these values have increased by 1.74°F, 3.19°F, and 2.47°F, respectively. More recently, since 1975, the maximum, minimum, and mean temperature departures have increased -0.76°F, 1.76°F, and 0.49°F, respectively. The historical data for these parameters are shown in Figures 7.4-2, 7.4-3, and 7.4-4.

Figure 7.4-2: Maximum Temperature Departure for South Coast Region

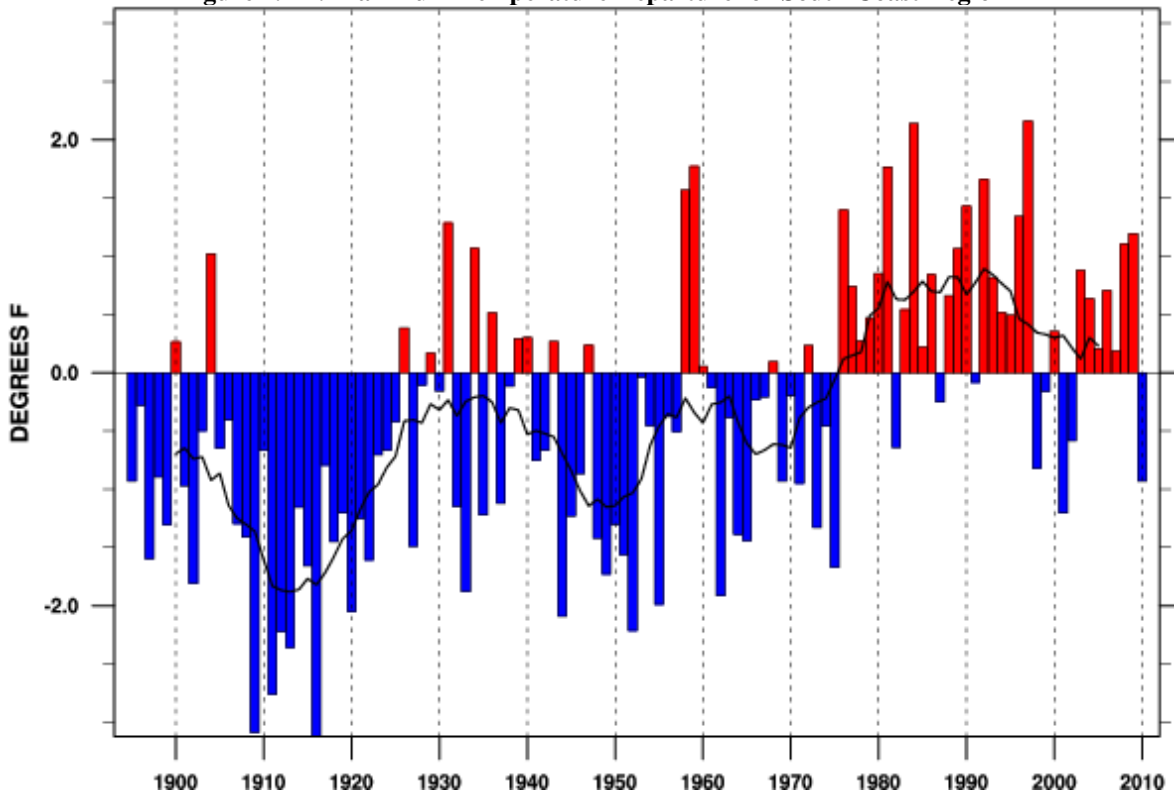


Figure 7.4-3: Mean Temperature Departure for South Coast Region

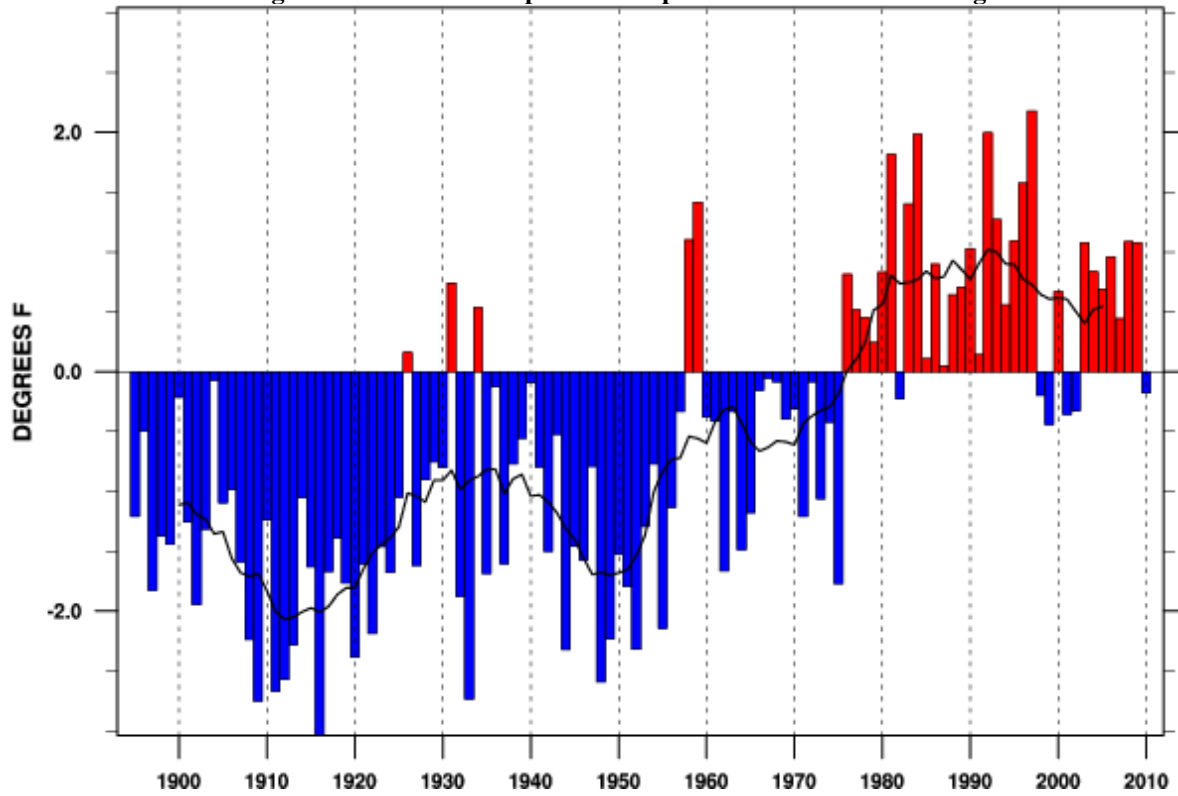
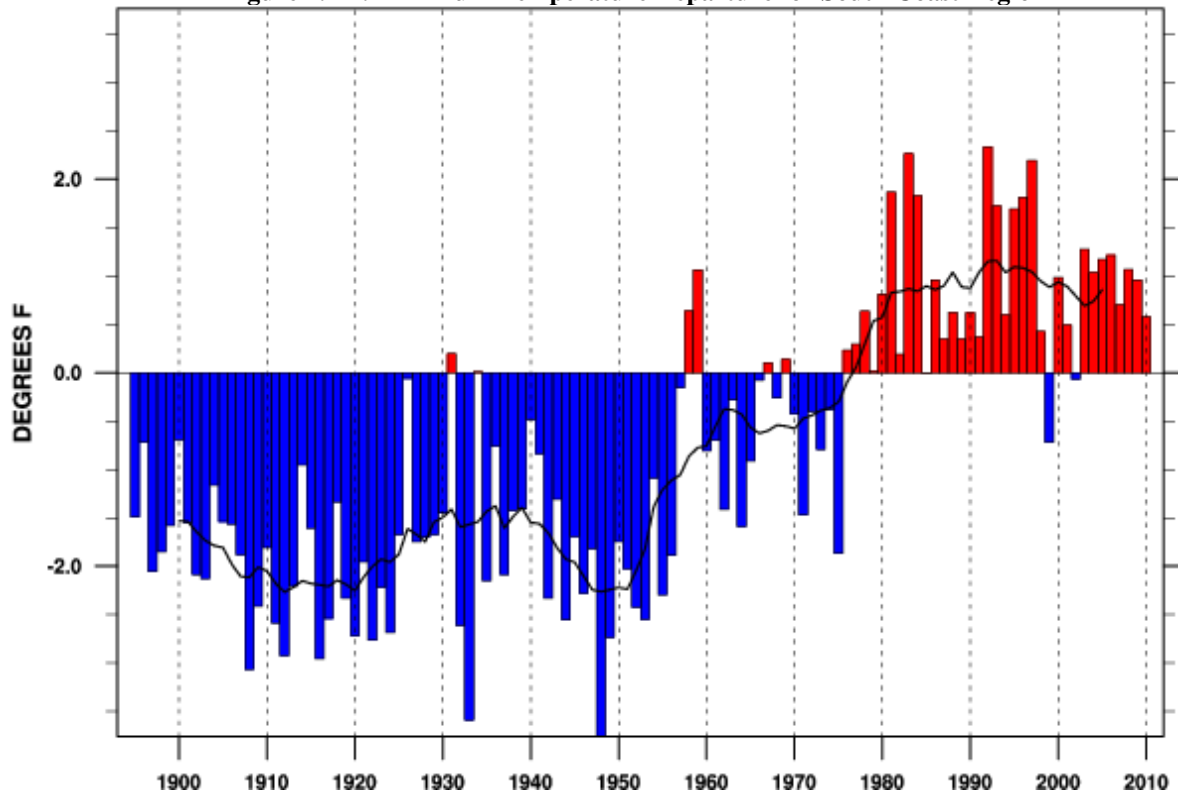
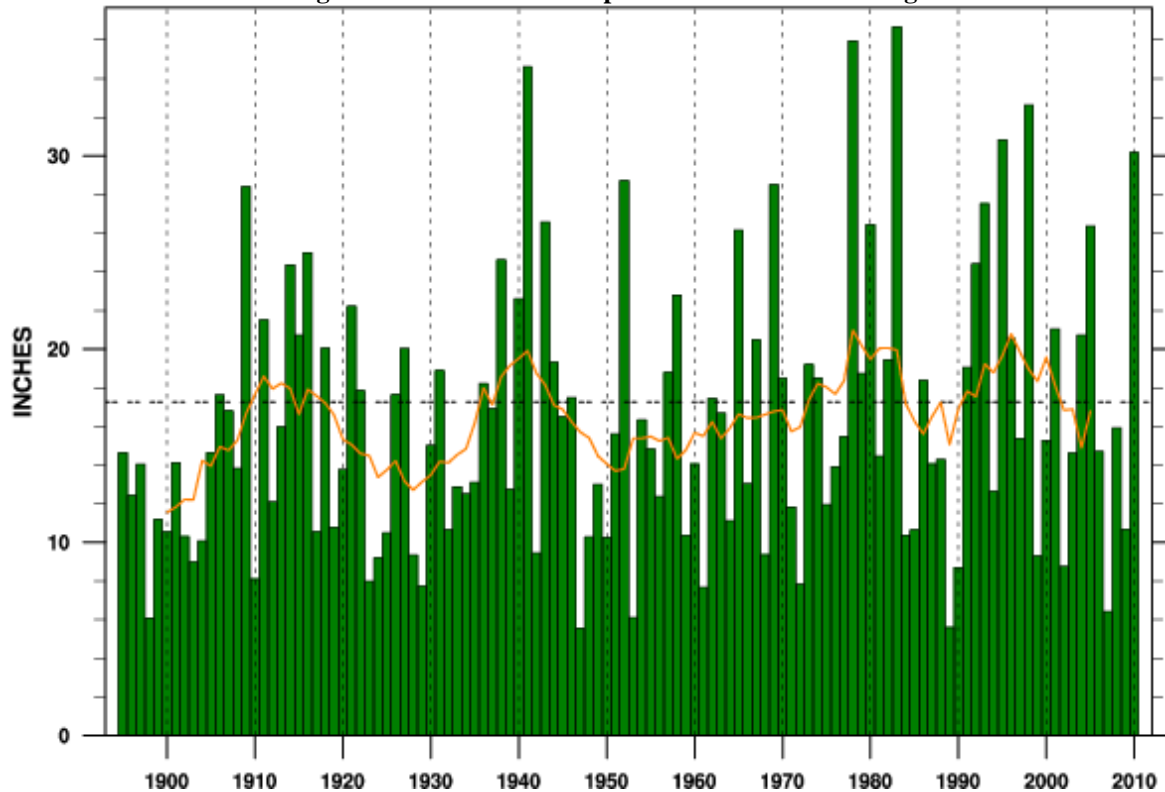


Figure 7.4-4: Minimum Temperature Departure for South Coast Region



Variation in annual rainfall totals has also shown an increasing trend since 1900 with more deviation from average occurring in recent decades as compared to earlier part of the century.

Figure 7.4-5: Annual Precipitation in South Coast Region



Historical data is showing a general correlation as to the general consensus for the different climate change scenarios. As stated above, a more comprehensive investigation will be prepared by Cal Water in 2013. The outcome of this report will outline mitigation and adaptation methods that will provide water supply reliability for Cal Water's service areas.

## 7.5 Climate Change Guidance

The California Department of Water Resources is currently in the process of compiling the potential actions and responses to climate change in the Integrated Regional Water Management (IRWM) climate change handbook. This handbook will provide guidance to water utilities for planning for the potential impacts of climate change and will offer a framework for responding to these impacts. Cal Water will review this handbook and other available literature when developing localized strategies for each of its water service districts.

## 8 Completed UWMP Checklist

### 8.1 Review Checklist

Table 8.1-1, adapted from DWR's *Guidebook to Assist Water Suppliers to Prepare a 2010 Urban Water Management Plan*, is included as a reference to assist DWR staff in review of this UWMP.

**Table 8.1-1: Urban Water Management Plan Checklist (organized by legislation number)**

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Subject <sup>b</sup>	Additional clarification	UWMP location
1	Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	10608.20(e)	Water Conservation		3.3.1
2	Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions.	10608.36	Water Conservation		6.4
3	Report progress in meeting urban water use targets using the standardized form.	10608.4	Water Conservation		Appendix G
4	Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	10620(d)(2)	External Coordination and Outreach		1.2
5	An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.	10620(f)	Water Supply (Water Management)		1.4
6	Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.	10621(b)	External Coordination and Outreach		1.2
7	The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).	10621(c)	External Coordination and Outreach		1.2
8	Describe the service area of the supplier	10631(a)	Service Area		2.1
9	(Describe the service area) climate	10631(a)	Service Area		2.3
10	(Describe the service area) current and projected population. . . The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier . . .	10631(a)	Service Area	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M.	2.2

11	... (population projections) shall be in five-year increments to 20 years or as far as data is available.	10631(a)	Service Area	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	2.2
12	Describe ... other demographic factors affecting the supplier's water management planning	10631(a)	Service Area		2.2
13	Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).	10631(b)	Water Supply	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	4.1
14	(Is) groundwater ... identified as an existing or planned source of water available to the supplier ...?	10631(b)	Water Supply	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	4.4
15	(Provide a) copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management. Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	10631(b)(1)	Water Supply		4.4.2
16	(Provide a) description of any groundwater basin or basins from which the urban water supplier pumps groundwater.	10631(b)(2)	Water Supply		4.4.1
17	For those basins for which a court or the board has adjudicated the rights to pump groundwater, (provide) a copy of the order or decree adopted by the court or the board	10631(b)(2)	Water Supply		Appendix I

18	(Provide) a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.	10631(b)(2)	Water Supply		4.4
19	For basins that have not been adjudicated, (provide) 10631(b)(2) Water Supply information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.	10631(b)(2)	Water Supply		4.4.1
20	(Provide a) detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.	10631(b)(3)	Water Supply		4.4
21	(Provide a) detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.	10631(b)(4)	Water Supply	Provide projections for 2015, 2020, 2025, and	4.4
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following: (A) An average water year, (B) A single dry water year, (C) Multiple dry water years.	10631(c)(1)	Reliability		5.3
23	For any water source that may not be available at a consistent level of use - given specific legal, environmental, water quality, or climatic factors - describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.	10631(c)(2)	Reliability		5.1
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)	Water Supply (Transfers)		4.7
25	Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a)), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses: (A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof;(I) Agricultural.	10631(e)(1)	Water Demands	Consider "past" to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years.	3.3

26	(Describe and provide a schedule of implementation for) each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following: (A) Water survey programs for single-family residential and multifamily residential customers; (B) Residential plumbing retrofit; (C) System water audits, leak detection, and repair; (D) Metering with commodity rates for all new connections and retrofit of existing connections; (E) Large landscape conservation programs and incentives; (F) High-efficiency washing machine rebate programs; (G) Public information programs; (H) School education programs; (I) Conservation programs for commercial, industrial, and institutional accounts; (J) Wholesale agency programs; (K) Conservation pricing; (L) Water conservation coordinator; (M) Water waste prohibition; (N) Residential ultra low-flush toilet replacement programs.	10631(f)(1)	DMMs	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	6.5
27	A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.	10631(f)(3)	DMMs		6.2
28	An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.	10631(f)(4)	DMMs		6.3
29	An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following: (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors; (2) Include a cost-benefit analysis, identifying total benefits and total costs; (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost; (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.	10631(g)	DMMs	See 10631(g) for additional wording.	6.4

30	(Describe) all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.	10631(h)	Water Supply		4.9
31	Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.	10631(i)	Water Supply		4.6
32	Include the annual reports submitted to meet the Section 6.2 requirement (of the MOU), if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)	DMMs	Signers of the MOU that submit the biannual reports are deemed	6.5
33	Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).	10631(k)	Water Supply	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	4.2
34	The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)	Water Demands		3.3.2
35	Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.	10632(a)	Contingency		5.3.5
36	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.	10632(b)	Contingency		5.2

37	(Identify) actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.	10632(c)	Contingency		5.3.9
38	(Identify) additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.	10632(d)	Contingency		5.3.7
39	(Specify) consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.	10632(e)	Contingency		5.3.5
40	(Indicated) penalties or charges for excessive use, where applicable.	10632(f)	Contingency		5.3.7
41	An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.	10632(g)	Contingency		5.3.8
42	(Provide) a draft water shortage contingency resolution or ordinance.	10632(h)	Contingency		5.3
43	(Indicate) a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)	Contingency		5.3.7
44	Provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area	10633	Recycled Water		4.5
45	(Describe) the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	10633(a)	Recycled Water		4.5.1
46	(Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	10633(b)	Recycled Water		4.5.2
47	(Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.	10633(c)	Recycled Water		4.5.3
48	(Describe and quantify) the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.	10633(d)	Recycled Water		4.5.3
49	(Describe) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.	10633(e)	Recycled Water		4.5.3

50	(Describe the) actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.	10633(f)	Recycled Water		4.5
51	(Provide a) plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.	10633(g)	Recycled Water		4.5
52	The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.	10634	Water Supply (Water Quality)	For years 2010, 2015, 2020, 2025, and 2030	5.2.4
53	Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)	Reliability		5.2
54	The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.	10635(b)	External Coordination and Outreach		1.2
55	Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	10642	External Coordination and Outreach		1.2
56	Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area.	10642	External Coordination and Outreach		1.2
57	After the hearing, the plan shall be adopted as prepared or as modified after the hearing.	10642	External Coordination and Outreach		1.3
58	An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.	10643	External Coordination and Outreach		1.6

59	An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.	10644(a)	External Coordination and Outreach		1.3
60	Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.	10645	External Coordination and Outreach		1.3
<p><sup>a</sup> The UWMP Requirement descriptions are general summaries of what is provided in the legislation. Urban water suppliers should review the exact legislative wording prior to submitting its UWMP.</p>					
<p><sup>b</sup> The Subject classification is provided for clarification only. A water supplier is free to address the UWMP Requirement anywhere with its UWMP, but is urged to provide clarification to DWR to facilitate review for completeness.</p>					

**APPENDIX A-1: RESOLUTION TO ADOPT UWMP**

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**APPENDIX A-2: CORRESPONDENCES**

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**APPENDIX A-3: PUBLIC MEETING NOTICE**

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**APPENDIX B: SERVICE AREA MAP**

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**APPENDIX C: WATER SUPPLY, DEMAND, AND PROJECTION  
WORKSHEETS**

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**APPENDIX D: DWR'S GROUNDWATER BULLETIN 118**

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**APPENDIX E: TARIFF RULE 14.1 WATER CONSERVATION AND  
RATIONING PLAN, AND LOCAL ORDINANCES**

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**APPENDIX F: WATER EFFICIENT LANDSCAPE GUIDELINES**

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**APPENDIX G: CONSERVATION MASTER PLAN**

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**APPENDIX H: GROUNDWATER MANAGEMENT PLAN**

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**APPENDIX I: PURCHASE AGREEMENT AND CENTRAL BASIN  
ADJUDICATION ORDER**

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**APPENDIX J: WRD STRATEGIC PLAN**

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