City of Lakewood
Urban Water Management Plan
Update
2010

May 24, 2011

RESOLUTION NO. 2011-23

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LAKEWOOD ADOPTING THE CITY OF LAKEWOOD 2010 URBAN WATER MANAGEMENT PLAN UPDATE DESCRIBING THE CITY'S WATER SUPPLY PLAN FOR THE NEXT TWENTY YEARS

WHEREAS, the Urban Water Management Planning Act requires all water purveyors serving more than 3,000 customers or supplying more that 3,000 acre feet of water annually to prepare an Urban Water Management Plan every five years; and

WHEREAS, the primary purpose of the Urban Water Management Plan is to plan for the conservation and efficient use of water supplies; and

WHEREAS, the City is an urban water purveyor serving approximately 59,660 customers; and

WHEREAS, the 2010 Urban Water Management Plan Update must be adopted before July 1, 2011 after public review and public hearing, and filed with the State of California Department of Water Resources within thirty days of adoption; and

WHEREAS, the 2010 Urban Water Management Plan Update, was reviewed by the Water Resources Committee on March 21, 2011; and

WHEREAS, said Water Resources Committee recommends that said Plan be submitted to public review and approved by the City Council following a public hearing; and

WHEREAS, said Plan has been available for public review beginning March 25, 2011;

NOW, THEREFORE, the City Council of the City of Lakewood does hereby resolve as follows:

SECTION 1. The Urban Water Management Plan is hereby adopted and filed with the City Clerk. The City Council finds that said 2010 Urban Water Management Plan Update, has been submitted to a public review and a public hearing before the City Council on May 24, 2011.

SECTION 2. The 2010 Urban Water Management Plan Update is hereby approved, and the Mayor is authorized and directed to file the same with the California Department of Water Resources within thirty (30) days.

ADOPTED AND APPROVED THIS 24TH DAY OF MAY, 2011.

Mayor

ATTEST:

City Clerk

Table of Contents

Section 1: Plan Preparation Lakewood Department of Water Resources 2010 Urban Water Management Plan

Agency Coordination 1
Public Participation 1
Adoption, Submittal & Implementation 2

Section 2: System Description City of Lakewood Snapshot

Description of Lakewood 3
Lakewood Water Purveyors 3
Land Use 4
Climate 5
Lakewood Population 6

Section 3: Water Demands City of Lakewood Department of Water Resources Past, Current and Projected Water Use

Water Demand 9
Actual Water Demand 2005 and 2010 9
Projected Water Demand 2015, 2020, 2025, 2030 10
Water Demand for Low Income Households 11
Sales to Other Water Agencies 12
Additional Water Uses and Losses 12
Import Water Demand 13
Baseline and Targets 14
Baseline Calculations 14
Water Use Target 16
City of Lakewood Target 16
Regional AllianceTarget 16
Water Use Reduction Plan 17
Reducing Residential Water Demand 17
Reducing Commercial Water Demand 18

Section 4: System Supplies Water Sources

Imported Water Sources 19
Groundwater 20
Central Groundwater Basin 20
Groundwater Management Program 21
Central Basin Adjudication 22
Lakewood's Groundwater Production 23
Transfer or Exchange Opportunities 24
Development of Desalinated Water 25
Recycled Water Opportunities 25
Wastewater Quantity, Quality and Current Uses 26
Lakewood's Current Recycled Water Uses 28
Recycled Water Incentives 28

Recycled Water System Expansion 29
Future Water Projects 30

Section 5: Reliability of Supply and Water Shortage Contingency Planning
Water Supply Reliability 31
Inconsistent Water Sources 32
Water Shortage Contingency Planning 32
Preparation for Catastrophic Water Supply Interruption 32
Regional Power Outage 33
Earthquake 33
Flooding 33
Stages of Action 33
Prohibition, Penalties, and Consumption Reduction Methods 34
Water Waste Provisions 34
Consumption Reduction Methods 35
Penalties and Charges 37
Analysis of Revenue Impacts of Reduced Sales during Water Shortage 38
Water Shortage Ordinance/Resolution and Water Use Monitoring Procedures 41
Water Quality 41
Drought Planning 42
Estimating Minimum Water Supply—Normal, Single Dry and Multiple Dry Years 42
Normal Water Supply Year 43
Single Dry Water Supply Year 43
Multiple Dry Water Supply Years 43
Current Water Supply Reliability 44
Single Dry Year Water Supply 45
Multiple Dry Year Supply 45

Section 6: Demand Management Measures
Implemented Demand Management Measures 47
Water Survey Programs for Single-Family and Multifamily Residential Customers 47
Residential Plumbing Retrofit 48
Metering with Commodity Rates for All New Connections & Retrofit Existing Connections 49
Large Landscape Water Audits and Incentives 50
High Efficiency Washing Machine Rebate Programs 51
Public Information Programs 51
Public Information Events 52
Publications 53
School Education Programs 53
Commercial and Industrial Water Conservation 54
Wholesale Agency Programs 54
Conservation Pricing 55
Water Conservation Coordinator 56

Water Waste Provisions 56
Residential Toilet Replacement Program 60
Demand Management Measures Not Implemented 61
System Water Audits, Leak Detection and Repair 61

Section 7: Completed Urban Water Management Checklist
Urban Water Management Plan Checklist Organized by Subject 63

Required Tables

Table 1: Agency Coordination 1
Table 2: Lakewood Population 7
Table 3: Water Deliveries- Actual FY2005 9
Table 4: Water Deliveries- Actual FY2010 10
Table 5: Water Deliveries- Projected FY2015 10
Table 6: Water Deliveries- Projected FY2020 11
Table 7: Water Deliveries- Projected FY2025 & FY2030 11
Table 8: Low Income Projected Water Demands 12
Table 9: Sales to Other Water Agencies 12
Table 10: Additional Uses and Loses 13
Table 11: Total Water Use 13
Table 12: Retail Agency Water Use 14
Table 13: Base Period Ranges 14
Table 14: Baseline Daily per Capita Water Use 10-Year Range 15
Table 15: Baseline Daily per Capita Water Use 5-Year Range 16
Table 16: Water Supplies- Current and Projected 19
Table 17: Wholesale Supplies- Existing and Planned Sources of Water 20
Table 18: Groundwater- Volume Pumped 24
Table 19: Groundwater- Volume to Be Pumped 24
Table 20: Transfer and Exchange Opportunities 25
Table 21: Recycled Water- Wastewater Collected and Treated 27
Table 22: Disposal of Non-Recycled Waste Water 27
Table 23: Recycled Water- Past and Potential Future Use 28
Table 24: Recycled Water Use- 2005 UWMP Use Projection Compared to 2010 Actual 28
Table 25: Methods to Encourage Recycled Water Use 29
Table 26: Future Water Supply Projects 30
Table 27: Basis of Water Year Data 42
Table 28: Supply Reliability- Historic Conditions 43
Table 29: Factors Resulting in Inconsistent Supply 32
Table 30: Water Quality- Current and Projected Water Supply Impacts 42
Table 31: Supply Reliability- Current Water Sources 44
Table 32: Supply and Demand Comparison- Normal Year 45
Table 33: Supply and Demand Comparison- Single Dry Year 45
Table 34: Supply and Demand Comparison- Multiple Dry Years 46
Table 35: Water Shortage Contingency- Rationing Stages to Address Water Supply Shortages 34
Table 36: Water Shortage Contingency- Mandatory Prohibitions 35
Table 37: Water Shortage Contingency- Consumption Reduction Method 36
Table 38: Water Waste Penalties and Charges 38

City of Lakewood
2010 Urban Water Management Plan
Contact Sheet

Plan Submittal Date:	June 30, 2011
Name of Person Submitting Plan:	Lawrence Van Nostran, Mayor
Phone Number:	562.866.9771
Water Supplier Type:	Municipality
Water Sales Type:	Retailer
Utility services provided by water utility:	Potable & Recycled Wastewater
Bureau of Reclamation Contractor:	No
State Water Project Contractor:	No
Preparer:	Nancy van der Linden, Water Administration Manager, under the direction of: James B. Glancy Director of Water Resources City of Lakewood 5050 Clark Ave. Lakewood, CA 90712 562.866.9771 ext. 2700 nvanderl@lakewoodcity.org

Section 1: Plan Preparation
City of Lakewood Department of Water Resources 2010 Urban Water Management Plan

Agency Coordination

The City's Department of Water Resources prepared the 2010 Urban Water Management Plan during February 2011. The department worked with various other City departments to compile the document. The City of Lakewood also relied on several regional agencies for the development of the utility's 2010 Urban Water Management Plan: Metropolitan Water District of Southern California (MWD), Central Basin Municipal Water District (CBMWD), City of Cerritos, Los Angeles County Sanitation Districts and Water Replenishment District of Southern California (WRD). See Table 1 for a summary of inter-agency and public involvement.

Table 1 Agency Coordination

Coordination and Public Involvement Actions

Coordinating Agencies	*Participated in Developing the Plan*	*Provided Comments on Draft*	*Attended Public Meetings*	*Contacted for Assistance*	*Sent a Copy of the Draft*	*Sent Notice of Intent to Adopt*	*No Involvement / No Information*
Other Water Suppliers				Central Basin Municipal Water District, City of Cerritos Water Department	Long Beach Water, Central Basin Municipal Water District, Golden State Water Co., Metropolitan Water District of Southern California, City of Cerritos	Long Beach Water, Central Basin Municipal Water District, Golden State Water Co., Metropolitan Water District of Southern California, City of Cerritos	
Water Management Agencies		Sanitation Districts of Los Angeles County		Sanitation Districts of Los Angeles County, Water Replenishment District of Southern California	Sanitation Districts of Los Angeles County, Water Replenishment District of Southern California	Sanitation Districts of Los Angeles County, Water Replenishment District of Southern California	
Relevant Public Agencies	City of Lakewood Departments: Administrative Services, City Clerk, Community Development, Public Works	City of Lakewood Departments: Administrative Services, City Clerk, Community Development, Public Works	City of Lakewood Departments: Administration, Administrative Services, Community Development, Public Works	City of Lakewood Departments: Administrative Services, City Clerk, Community Development, Public Works	City of Lakewood Departments: Administrative Services, City Clerk, Community Development, Public Works County of Los Angeles	City of Lakewood Departments: Administrative Services, City Clerk, Community Development, Public Works County of Los Angeles	
General Public					UWMP Draft online at www.lakewoodcity.org, City of Lakewood, Notice in *Lakewood Living Magazine,, Lakewood Community News, Lakewood Connect eMagazine,* Available at 2 City Parks & 2 Los Angeles County Libraries	UWMP Draft online at www.lakewoodcity.org, City of Lakewood, Notice in *Lakewood Living Magazine, Lakewood Community News*	
Other							

Public Participation

The Department of Water Resources staff met with the City Council Water Resources Committee on March 21, 2011 to discuss the content of the plan and obtain feedback. The City Council Water Resources Committee opened the public comment period and directed staff to schedule a public hearing to gather testimony regarding the 2010 Urban Water Management Plan Update on the May 24, 2011 City Council agenda and consider

plan adoption. The department informed the general public in the following manner:

- Post the notice regarding the Urban Water Management Plan public comment period and public hearing at two City recreation facilities and the City Clerk's office at Lakewood City Hall. This is the standard public hearing protocol, because the city does not have a newspaper of general circulation.

- Provided a draft copy of the plan to the two Los Angeles County libraries in the city of Lakewood for public review.

- Published information regarding the completion of the draft plan and availability for comment in a city newsletter, *Lakewood Living,* in April 2011. Lakewood sends this newsletter to all residents and business owners in the Department of Water Resources service area. Staff included notice in City of Lakewood's weekly eMagazine, *Lakewood Connect*, to approximately 12,000 residents and businesses after March 21, 2011, and the May 1, 2011 edition of the *Lakewood Community News*.

- Published draft Urban Water Management Plan on the City of Lakewood's website: www.lakewoodcity.org.

Adoption, Submittal & Implementation

On March 21, 2011 the Lakewood City Council Water Resources Committee opened the public comment period for the UWMP. The Lakewood City Council held a public hearing and adopting Resolution No. 2011-23 approving the amended plan on May 24, 2011. Staff presentation included the implementation plan for compliance with the Water Conservation Bill of 2009, 20 percent reduction in per capita water use by 2020.

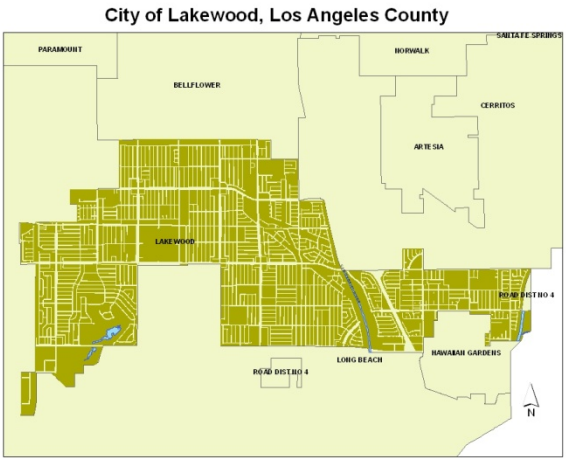
The following outlines the schedule for public review, adoption and submittal of the 2010 Urban Water Management Plan.

Adoption, Submittal & Implementation

Action	***Time Line***
Presentation of the UWMP to the City Council Water Resources Committee	March 21, 2011
City Council Opens Public Comment Period	March 21, 2011
Informed Outside Agencies Regarding the Preparation of the UWMP	March 25, 2011
UWMP Available for Public Comment in the City Clerk's Office, Mayfair Park, Nye and Iacoboni Libraries	March 25, 2011
UWMP Draft Available Online at www.lakewoodcity.org	March 28, 2011
Notification to Community of Public Comment Period	April, 2011
Deadline for Written Comments	May 24, 2011
City Council Holds Public Hearing to Accept Public Comments and Adopt UWMP	May 24, 2011
Submittal to the State of California Department of Water Resources, State Library	June 24, 2011
UWMP Available for Public Review at City of Lakewood City Clerk's Office and Department of Water Resources Office, and online at www.lakewoodcity.org, County of Los Angeles and affected agencies	June 24, 2011

Section 2: System Description
City of Lakewood Snapshot

Description of Lakewood



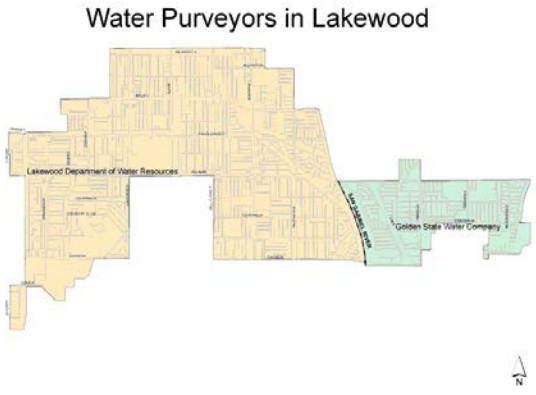
The City of Lakewood incorporated in 1954 as a general law city. Located 20 miles southeast of the city of Los Angeles, Lakewood borders the cities of Long Beach, Hawaiian Gardens, Bellflower and Cerritos, and Orange County.

Lakewood encompasses 9.5 square miles. It lies approximately 50 feet above sea level. The terrain is generally flat and regionally slopes to the south. Incorporated in 1954, most Lakewood development occurred within a 20-year period.

Lakewood Water Purveyors

Two water purveyors serve Lakewood. The City of Lakewood supplies water to Lakewood residents and businesses west of the San Gabriel River. The Department of Water Resources operates as a municipal water utility that relies solely on water revenues from potable water sales, recycled water sales and other water related funding sources. Golden State Water Company (GSWC), formerly Southern California Water Company, serves the area east of the river. GSWC is a privately held water utility governed by the Public Utilities Commission. GSWC maintains approximately 3,673 customer accounts in Lakewood.

Lakewood maintains approximately 195 miles of water mains, 18.5 miles of transmission mains, eleven water wells, a 1,125 gallons per minute water treatment facility, three water storage facilities holding approximately 13.1 million gallons, two connections to Metropolitan Water District of Southern California import supplies through Central Basin Municipal Water District, and three emergency interconnections with GSWC, the City of Cerritos and the City of Long Beach. The city relies on groundwater to meet current demand. The water wells are located throughout the City's service area. The pumped water either flows directly into the distribution system or into one of the water storage facilities. All Lakewood water customers receive water through a metered service connection.



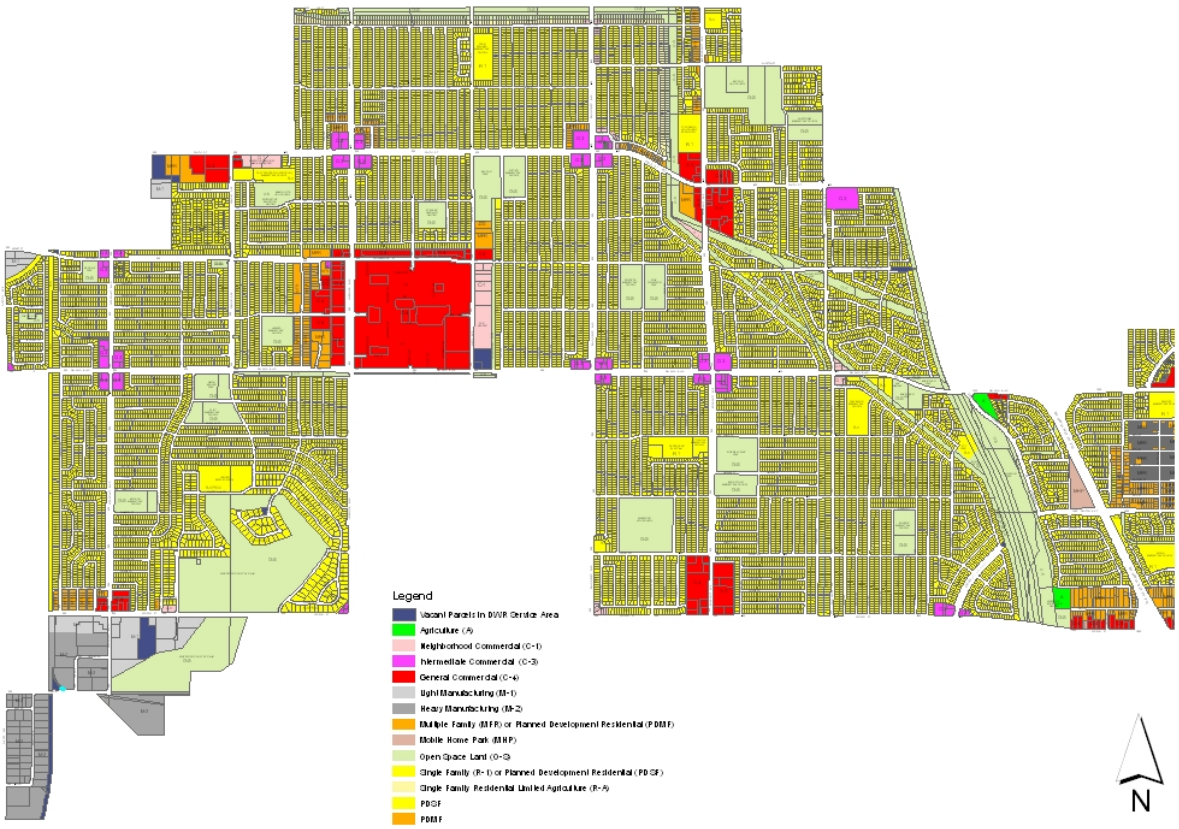
Land Use

Lakewood consists largely of single family dwellings. The vast majority of the single family residential parcels are 50 feet wide and 100 feet deep. The community's housing density is estimated at 2,874.7 housing units per square mile or 4.47 houses per acre.

Though the focal point for commercial activity is the Lakewood Center Mall, the city's forefathers built commercial centers at most major intersections for easy access by foot to grocery stores and other necessities. The anchors at Lakewood Center Mall include two department stores, Nordstrom Rack, Target, Home Depot, Best Buy and Costco. Approximately 500 additional retail and commercial businesses are also located in this regional shopping area.

The city manufacturing and industrial base is small due to the residential nature of the community. The majority of the manufacturing/industrial businesses, located in the southwest corner of the community, provide warehousing functions.

City of Lakewood Department of Water Service Area
Vacant Parcels
January 2011



Approximately 22 acres of land remains vacant in the Lakewood Department of Water Resources service area: 4.5 acres zoned commercial, 17 acres zoned manufacturing,

and .5 acres zoned residential. The table below indicates the city's distribution of land use. The largest vacant parcel is over 6.5 acres and zoned manufacturing. At this time there are no plans to develop this lot or any of the other vacant parcels due to the recent economic downturn. The vacant parcels are indicated in navy blue on the above map.

City of Lakewood Service Area Land Use

	Type of Land Use	***# of Acres***	***% of Total Acres***
Residential	▪ Single Family Homes- 18,862 Dwellings, 2,440 acres ▪ Multiple Family Homes- 2,143 Dwellings, 65 acres	2,505	50.5%
Commercial	▪ Lakewood Center Mall- 135 acres ▪ Financial/Office- 22 acres ▪ General Commercial- 341 acres	498	10%
Manufacturing/ Industrial	▪ Warehousing- 107 acres	107	2%
Public/Quasi Public	▪ City Parks/Facilities- 314 acres ▪ Public Schools- 211 acres ▪ Hospitals- 6 acres ▪ Religious/Private Education- 46 acres ▪ Streets- 1,063 acres ▪ Flood Control- 39 acres ▪ Railroad ROW- 17 acres ▪ Power ROW- 120 acres	1,816	37%
Miscellaneous	▪ Vacant Land- 22 acres	22	0.5%
Total		4,948	100.00%

The City currently maintains 21,005 housing units in the Department of Water Resources service area, 18,862 single family residential units and 2,143 multi-family units. The City of Lakewood Housing Element 2008-2014, approved by the Lakewood City Council in 2009, indicates a total of potential growth of 931 dwellings units. This estimate is based on a density of 22 units per acre. The potential construction of additional living units in the City's water utility service area is 130 units. These potential projects would be built on existing multi-family dwelling parcels. Though Lakewood's Municipal Codes does not currently allow construction of a second unit on existing parcels zoned for single family dwellings, an ordinance allowing this type of unit might be considered by the Lakewood City Council in the future. This revision would allow the construction of a second living unit on a SFR parcel if the lot size is 10,000 square feet or more. Approximately 261 parcels in Lakewood's water utility service area would meet the minimum lot size requirement.

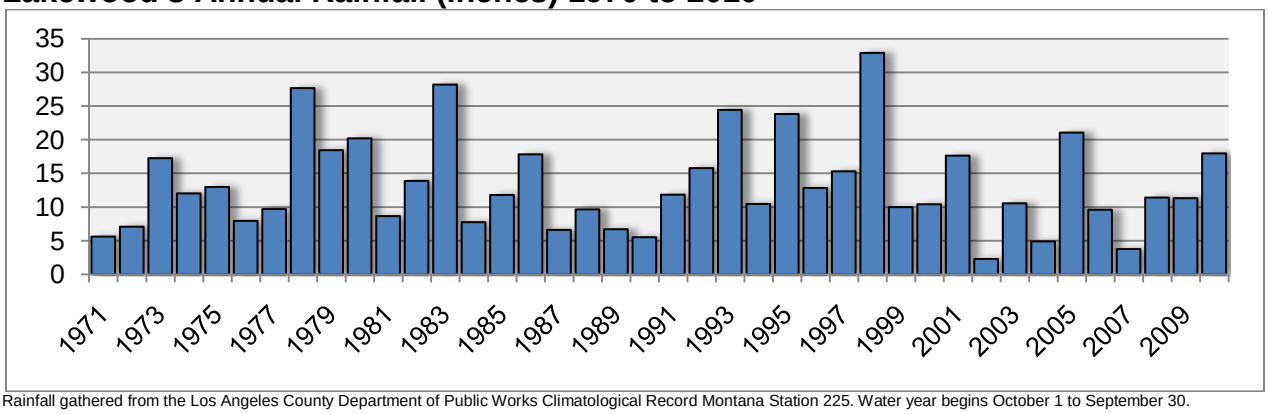
According to the City of Lakewood Housing Element 2008-2014, the population density has declined to 3.1 persons per household, down from the 1960 high of 3.77.

Climate

Lakewood lies close enough to the ocean to benefit from sea breezes and marine cloud layer. The temperature averages 84º in the summer months and 66º in the winter months. Rainfall averages 12-14 inches annually. Rainfall for the 2010 water year totaled 17.98 inches. The cyclical nature of the region's rainfall plays a significant role in water supply demand. Water demand drops in those years with above average rainfall. The following

chart indicates the historical rainfall for the city.

Lakewood's Annual Rainfall (Inches) 1970 to 2010



Rainfall gathered from the Los Angeles County Department of Public Works Climatological Record Montana Station 225. Water year begins October 1 to September 30.

The table below indicates the average monthly evapotranspiration levels, rainfall and high/low temperatures in the Long Beach/ Lakewood area.

Lakewood's Average Monthly ETo, Rainfall and Temperature

	Monthly Average ETo[1]	Monthly Average Rainfall (Inches)	Monthly Average Temperature (Fahrenheit)[2]	
			Low	High
January	1.65	2.96	45.5	66.9
February	2.15	3.54	47.3	67.3
March	3.59	2.37	49.7	68.4
April	4.77	0.64	52.3	71.8
May	5.12	0.27	56.7	73.6
June	5.71	0.09	60.2	77.1
July	5.93	0.04	63.6	82.4
August	5.91	0.11	64.9	84.0
September	4.39	0.25	62.9	82.4
October	3.22	0.58	58.0	78.1
November	2.18	1.05	50.3	72.0
December	1.68	1.83	45.2	67.2
Annual	46.30	13.73	54.7	74.3

Lakewood Population

Lakewood's population dipped between the 1980 and 1990 U.S. Census, but steadily increased since then: 7.8 percent increase from the 1990 census to the 2000, and a one percent increase between the 2000 and 2010 Census. Firm population estimates during non-census years are more difficult to estimate. The City relies on the California Department of Finance population estimates for non-census years.

The City of Lakewood Department of Water Resources serves 74 percent of the city of Lakewood's population, located west of the San Gabriel River. The 1990, 2000 and 2010 population for the utility's service area listed in Table 2 is based on census tract data. The 74 percent is based on the percent of Lakewood's total 2010 U.S. Census population located within the census tracts west of the San Gabriel River. U.S. Census data

[1] ETo from CIMIS (www.cimis.water.ca.gov)

[2] Monthly Average High and Low Temperatures from Western Regional Climate Center April 1, 1958 to December 31, 2004 (www.wrcc.dri.edu)

indicates a population increase of two percent in the Lakewood Department of Water Resources' service area.

The population for 1995 and 2005 are calculated at 74 percent of Lakewood's total population as estimated by the California Department of Finance.

The 2015, 2020, 2025 and 2030 population projections are based on Southern California Area Governments estimates for the city of Lakewood. Department of Water Resources (DWR) service area estimates are based on 74 percent of the SCAG's estimated population for Lakewood. Based on SCAG's projects, Lakewood anticipates minimum population growth during this timeframe, and expects most growth to occur in the eastern portion of the city, which is served by Golden State Water Company. The Lakewood 2008-2014 Housing Element summarizes the potential growth as:

> The local population increase projected for the next decade and a half will come from an increase in the number of persons per household as more young families move into the City, and to a lesser extent from increased residential density as some Multiple Family Residential (MFR) zoned areas occupied by single family homes are redeveloped with MFR structures.[3]

The following table indicates the projected population growth for the city of Lakewood and the portion of Lakewood served by the Lakewood Department of Water Resources.

Table 2 **Lakewood Population Projections**

	1990	*1995*	*2000*	*2005*	*2010*	*2015*	*2020*	*2025*	*2030*	*Data Source*
Lakewood	73,557	75,513	79,345	83,079	80,048	84,354	84,420	84,425	84,430	U.S. Census Bureau, CA Dept. of Finance, & SCAG[1]
DWR Service Area	55,186	56,634	58,461	61,478	59,660	62,421	62,470	62,474	62,478	U.S. Census Bureau, CA Dept. of Finance & SCAG[2]

[1]U.S. Bureau of Census, Census Data Tract: 1990, 2000, 2010
California Department of Finance Population Estimates: 1995, 2005
Southern California Area Governments 2008 Data: 2015, 2020, 2025, 2030
[2]U.S. Bureau of Census, Census Data Tract: 1990, 2000 & 2010
California Department of Finance Population Estimates: 74 % of Estimates for 1995, 2005
Southern California Area Governments 2008 Data: 74% of Estimates for 2015, 2020, 2025, 2030

The Southern California Area Governments' population projections between now and 2030 for the Department of Water Resources' service area are less than one percent growth.

[3] City of Lakewood 208-2014 Housing Element, September 2009, 6.

Section 3: Water Demands
City of Lakewood Department of Water Resources
Past, Current and Projected Water Use

Water Demand

Actual Water Demand 2005 and 2010

The City of Lakewood Department of Water Resources operates as a municipal water utility, which relies solely on water revenues from potable and recycled water sales, and other water related funding sources to finance operational and capital expenditures. The City currently maintains service connections to 20,421 active accounts, a decrease of 38 customers since 2005. All water delivered to Lakewood water customers is metered.

The predominantly residential character of Lakewood coupled with the retail base that exists in the community creates a stable environment for water demand. The Department of Water Resources anticipates little fluctuation in the type of water account and water use over the planning period.

Table 3 **Water Deliveries- Actual 2005**

	Metered		Unmetered		Total
Water Use Sector	**# of Accounts**	**Volume (af)**	**# of Accounts**	**Volume (af)**	**Volume (af)**
Single Family	19,078	6,689	0	0	6,689
Multi-Family	202	413	0	0	413
Commercial			0	0	
Industrial	965	1,271	0	0	1,271
Institutional/Governmental			0	0	
Landscape (includes recycled water deliveries)	39	415	0	0	415
Agriculture			0	0	
Other	175	224	0	0	224
TOTAL	**20,459**	**9,012**	**0**	**0**	**9,012**

Beginning in 2007, Lakewood conducted an aggressive water conservation campaign without resorting to mandatory conservation measures. The community responded to the request to save water. The FY2010 water deliveries were 2 percent lower than projected for 2010 in the City of Lakewood 2005 Urban Water Management Plan Update. The drop in water deliveries is due in part to the almost 18 inches of rain received in the 2009-2010 Water Year (begins October 1, ends September 30), moderate temperatures over the summer months, the nationwide economic downturn also affected water use and the call to conserve water.

Table 4 **Water Deliveries- Actual FY2010**

Water Use Sector	Metered		Unmetered		Total
	# of Accounts	Volume (af)	# of Accounts	Volume (af)	Volume (af)
Single Family	19,134	6,107	0	0	6,107
Multi-Family	206	352	0	0	352
Commercial	841	1,417	0	0	1,417
Industrial			0	0	
Institutional/Governmental	62	172	0	0	172
Landscape (includes recycled water deliveries)	41	444	0	0	444
Agriculture			0	0	
Other	137	0	0	0	0
TOTAL	**20,421**	**8,492**	**0**	**0**	**8,492**

Projected Water Demand 2015, 2020, 2025 & 2030

In October 2010 the City implemented changes in the water conservation rate structure. These changes separated landscape irrigation and several commercial customer types to encourage conservation and monitor water consumption by specific water user groups. Table 5, 6 and 7 distribute the customer accounts based on the new water conservation rate structure. The 2015 through 2030 projections are calculated based on the year's estimated population and the gallons per capita per day goal. The calculation also included the addition of Lakewood's credit for recycled water used for groundwater recharge.

The projected deliveries for 2015 are calculated based on the interim target water use of 103 gallons per capita per day.

Table 5 **Water Deliveries- Projected FY2015**

Water Use Sector	Metered		Unmetered		Total
	# of Accounts	Volume (af)	# of Accounts	Volume (af)	Volume
Single Family	19,153	7,040	0	0	7,040
Multi-Family	206	405	0	0	405
Commercial	797	1,257	0	0	1,257
Industrial			0	0	
Institutional/Governmental	62	198	0	0	198
Landscape (No Recycled)	215	376	0	0	376
Agriculture			0	0	
Other	137	1	0	0	1
TOTAL	**20,570**	**9,277**	**0**	**0**	**9,277**

The projected deliveries for 2020, 2025 and 2030 are calculated based on the target water use of 100 gallons per capita per day.

Table 6 **Water Deliveries- Projected FY2020**

Water Use Sector	Metered		Unmetered		Total
	# of Accounts	Volume(af)	# of Accounts	Volume (af)	Volume
Single Family	19,153	6,885	0	0	6,885
Multi-Family	206	396	0	0	396
Commercial	797	1,229	0	0	1,229
Industrial			0	0	
Institutional/Governmental	62	194	0	0	194
Landscape (No Recycled)	215	368	0	0	368
Agriculture			0	0	
Other	137	1	0	0	1
TOTAL	**20,570**	**9,073**	**0**	**0**	**9,073**

Table 7 **Water Deliveries- Projected FY2025 & FY2030**

Water Use Sector	2025 Metered		2030 Metered	
	# of Accounts	Volume (af)	# of Accounts	Volume (af)
Single Family	19,153	6,885	19,153	6,885
Multi-Family	206	396	206	396
Commercial	797	1,229	797	1,230
Industrial				
Institutional/Governmental	62	194	62	194
Landscape (No Recycled)	215	368	215	368
Agriculture				
Other	137	1	137	1
TOTAL	**20,570**	**9,073**	**20,570**	**9,074**

Water Demand for Low Income Households

The Lakewood Housing Element indicates that 6,605 households or 25 percent of Lakewood's households earn income 50% to 80% less than the city's median income of $58,447. According to the American Community Survey[4] approximately five percent of families considered low income reside in the Lakewood. The City of Lakewood Housing Element identifies extremely low income households as those households with an income 30 percent below the City's median family income. Forty-five percent of the 1,660 households considered extremely low income live in an owner occupied house and 55 percent rent. Using this information and calculating water use based on the population estimates in Table 2 the projected water demand for the low income population is indicated in Table 8 below. Since the estimated water demand over the next 20 years will remain very near 2010 levels, the low income demand is expected to remain fairly constant.

[4] 2005-2009 American Community Survey 5-Year Estimates Population and Housing Narrative Profile: 2005-2009 and Housing Data for City of Lakewood

Table 8 Low Income Projected Water Demands (acre feet)

Low Income Water Demands	2015	2020	2025	2030
Single Family Residential	157	157	157	157
Multi-Family Residential	193	193	193	193
TOTAL	**350**	**350**	**350**	**350**

Sales to Other Water Agencies

The City of Lakewood maintains emergency water connections with three neighboring utilities: City of Cerritos, Golden State Water Company (GSWC) and City of Long Beach. While the City has delivered water to Golden State Water Company during periods when a key treatment plant is down for service, Lakewood does not plan to sell water to any of these agencies as a reliable source of supply. In the past five years the City of Lakewood has sold 263 acre feet of water to supplement GSWC's supply while a water production facility underwent repairs. Table 9 indicates the anticipated water sales to neighboring water purveyors. Any need for nonemergency water supplies would be accomplished through the lease of water rights rather than direct delivery to another agency.

Table 9 Sales to Other Water Agencies (acre feet)

Water Distributed	2005	2010	2015	2020	2025	2030
Golden State Water Company	0	37	0	0	0	0
City of Cerritos	0	0	0	0	0	0
City of Long Beach	0	0	0	0	0	0
TOTAL	**0**	**37**	**0**	**0**	**0**	**0**

Additional Water Uses & Losses

In 2005 the City of Lakewood signed a water storage agreement with the City of Long Beach Water Department, which will remain in effect during the timeframe for this Urban Water Management Plan. Long Beach transfers water rights, via a lease agreement, to Lakewood when supplemental water is available, and Long Beach calls this water as needed. The stored water is returned to Long Beach through the emergency inter-connection between the two utilities. Long Beach pays the groundwater extraction fees and operating and maintenance costs associated with the agreement. The City of Lakewood received funds for the drilling of an additional well and the partial funding of a treatment plant to handle the additional capacity required to meet the additional demand when sending the transferred water back to Long Beach.

Long Beach can store 1,200 acre feet per year with Lakewood up to 3,600 acre feet total water, but Long Beach can only call 900 acre feet in any fiscal year. The called water received from this agreement frees Long Beach from purchasing import supplies from Metropolitan Water District of Southern California. To date Long Beach has stored 1,800 acre feet of water with Lakewood and called 900 acre feet. The call on stored water supplies is triggered by reduced imported water supplies to Long Beach. The projected water use for the next twenty years includes 900 acre feet in 2020 and 2030 of called water to satisfy the provisions in the storage agreement. However, the return of stored water back to Long Beach is solely based on MWD's supply status. It cannot be anticipated five years in advance.

All recycled water sold to customers in the City of Lakewood's service area is used for irrigation. Since weather patterns affect irrigation schedules, the contractual amount of 450 acre feet was used to project future demand. It is anticipated that actual use will vary with the weather.

The projected system loss is 171 acre feet, and is based on 2 percent of the total water deliveries. This percentage may be high. System loss varies between 1% and 2%.

Table 10 Additional Water Uses & Losses (acre feet)

Water Use	2005	2010	2015	2020	2025	2030
Saline Barrier	0	0	0	0	0	0
Groundwater Recharge	0	0	0	0	0	0
Conjunctive Use	0	900	0	900	0	900
Raw Water	0	0	0	0	0	0
Recycled Water	352	444	450	450	450	450
System Losses	209	111	171	171	171	171
Other: Test Pumping Water Well	0	12	0	0	0	0
TOTAL	**561**	**1,467**	**621**	**1,521**	**621**	**1,521**

As indicated above, the total water use for FY2010 dropped significantly due to greater than normal rainfall, cool summer temperatures, conservation and the economy. The per capita water use for FY2010 was 94 gallons per person per day. The increase in water projections for FY2015 is due to the use of a 10-year average that ends in FY2005. While the water use in this period fluctuates between 98 and 115 gallons per capita per day, the average is 105 gallons per capita per day. To meet the 20 percent by 2020 goal, the water demand must drop approximately 2 percent. Since the estimated population is not expected to change significantly after 2020, water demand is expected to remain constant.

Table 11 Total Water Use (acre feet)

Water Use	2005	2010	2015	2020	2025	2030
Total Water Deliveries Tables 3 to 7	8,660	8,048	9,277	9,073	9,073	9,074
Sales to Other Water Agencies Table 9	0	37	0	0	0	0
Additional Water Uses & Losses Table 10	561	1,467	621	1,521	621	1,521
TOTAL	**9,221**	**9,552**	**9,898**	**10,594**	**9,694**	**10,595**

Total Water Deliveries Subtract Recycled Water from Total of Actual Water Deliveries for 2005 and 2010

Import Water Demand

The Lakewood Department of Water Resources no longer relies on the direct purchase of import supplies from wholesale agencies. The last purchase of imported water through the Central Basin Municipal Water District was in April 1991. The likelihood of future direct import purchases is not anticipated. The cost of import supplies coupled with the differences in the treatment process make the use of import supplies doubtful. While the City maintains two connections to Central Basin MWD, it does not have a contract for water purchases at this time.

Table 12 **Retail Agency Water Use (acre feet)**

Wholesale	Contracted Volume	2010	2015	2020	2025	2030
Central Basin Municipal Water District	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0

Baseline and Targets

Baseline Calculations

The Lakewood Department of Water Resources determined the base period for development of the 20 percent by 2020 target by examining all the potential timeframes. The City's recycled water use does not exceed 10 percent of the utilities' water demand, so the DWR used the 10-year base period. Fiscal Year 1996 to Fiscal Year 2005 (Table 14) was chosen for the calculation to meet the requirements of Section 10608.20 of the California Water Code. FY2004 through FY2008 to calculate the 5-year gross water use as established in Section 10608.22 of the Water Code (Table 15). (See Attachment 1.)

Table 13 **Base Period Ranges**

Base	Parameter	Value	Units
10- to 15-year base period	2008 total water deliveries	9,299*	acre feet
	2008 total volume of delivered recycled water	457	acre feet
	2008 recycled water as a percent of total deliveries	5	Percent
	Number of years in base period	10	Years
	Year beginning base period range	FY1996	
	Year ending base period range	FY2005	
5-year base period	Number of years in base period	5	Years
	Year beginning base period range	FY2004	
	Year ending base period range	FY2008	

*Total water deliveries for FY2008 prior to adjustment for recycled water used for replenishment.

The following is an explanation of the calculation of the baseline water use for both time periods:

- **Population Estimates.** Population estimates were developed as indicated above. The utility used U.S. Census data for FY2010 population. The U.S. Census tracts on the west side of the San Gabriel River mimic the utility's services area. DWR staff used the 2010 U.S. Census data for all of Lakewood to calculate the percentage of Lakewood's population service by the City, 74 percent. The years when U.S. Census data was unavailable the population estimates were based on 74 percent of the California Department of Finance estimates or the Southern California Area Government's projected estimates for all of Lakewood.

- **Groundwater Extractions.** Groundwater extractions were gathered for the baseline period using the Watermaster reports. Water used to develop water production wells and water sold to other water utilities were subtracted from the groundwater production to determine the volume entering the distribution system. The Lakewood DWR did not make meter error adjustments for metering at water production facilities.

The Watermaster tests the utilities' water meters every two years for accuracy, and meters beyond five percent accuracy are repaired or replaced. This testing routine made inclusion of this calculation unnecessary.

- **Purchased Water Supplies.** During FY1997 and FY1998 Lakewood purchased additional supplies from the City of Cerritos, 92 acre feet and 36 acre feet respectively. Lakewood received the water from an emergency inter-connection between the two utilities installed in 1996. The bi-directional meter was tested upon completion of the project, so the gross water calculation does not contain a meter error adjustment.

- **Change in Distribution Storage.** The net change in the distribution system storage was not included in the gross water calculation. This factor was considered insignificant.

- **Gross Water Use before Indirect Recycled Water Use.** Groundwater extractions and purchased potable water were combined.

- **Indirect Water Use Deduction.** The Water Replenishment District of Southern California (WRD) uses recycled wastewater to maintain the groundwater table. The DWR determined the five year average of recycled water used for replenishment from FY1990 (beginning July 1, 1990) to FY1995 (June 30, 1995). The Lakewood Department of Water Resources calculated its portion of recycled water used for groundwater replenishment by making the following calculations: determined the percent of total groundwater extractions attributed to Lakewood; and multiplied the five year average of recycled recharge water and Lakewood's percentage of groundwater extractions less 10 percent for in-basin loss of supply and 3 percent adjustment for unaccounted for water. The 676 million gallons was deducted from each of the years.

- **Agricultural Water Use & Process Water Use.** These water uses were not included in the gross water use calculation.

Table 14 Base Daily per Capita Water Use—10-year Range

Base Period Year		Distribution System Population	Daily System Gross Water Use	Annual Daily per Capita Water Use (gpcd)
Sequence Year	Fiscal Year			
Year 1	FY1996	56,828	6,320,718	111
Year 2	FY1997	57,275	6,576,842	115
Year 3	FY1998	57,751	5,785,266	100
Year 4	FY1999	58,371	6,012,833	103
Year 5	FY2000	58,461	6,328,749	108
Year 6	FY2001	58,715	5,963,750	102
Year 7	FY2002	60,163	6,376,047	106
Year 8	FY2003	60,804	6,201,133	102
Year 9	FY2004	61,311	6,593,798	108
Year 10	FY2005	61,478	6,032,466	98
			Base Daily Per Capita Water Use	**105**

Table 15 Base Daily per Capita Water Use—5-year Range

Base Period Year		Distribution System Population	Daily System Gross Water Use	Annual Daily per Capita Water Use (gpcd)
Sequence Year	Fiscal Year			
Year 1	FY2004	61,311	6,593,798	108
Year 2	FY2005	61,478	6,032,466	98
Year 3	FY2006	61,398	6,388,541	104
Year 4	FY2007	61,296	6,860,631	112
Year 5	FY2008	61,325	6,446,548	105
			Base Daily Per Capita Water Use	**105**

Water Use Target

City of Lakewood Target

The provisions in *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* establish 100 gallons per capita per day as the floor for conservation efforts. Any utility that calculates a baseline at or below 100 gallons per capita per day is not required to further reduce per capita water use. Lakewood's baseline per capita water use is 105 gallons per capita per day using the calculations for both the 5-year and 10-year range. Since the utility's baseline water use is already nearing the 100 gallons per day per capita mark, Lakewood plans to use Method 1 to determine the water use target. Method 1 is 80 percent of the water supplier's baseline per capita water use. Eight percent of 105 per capita per day is 84 gallons per capita per day. Since this is below the 100 per capita per day floor, Lakewood's 2020 target is 100 gallons per capita per day. The interim goal is the midpoint, 103 gallons per capita per day.

Regional Alliance Target

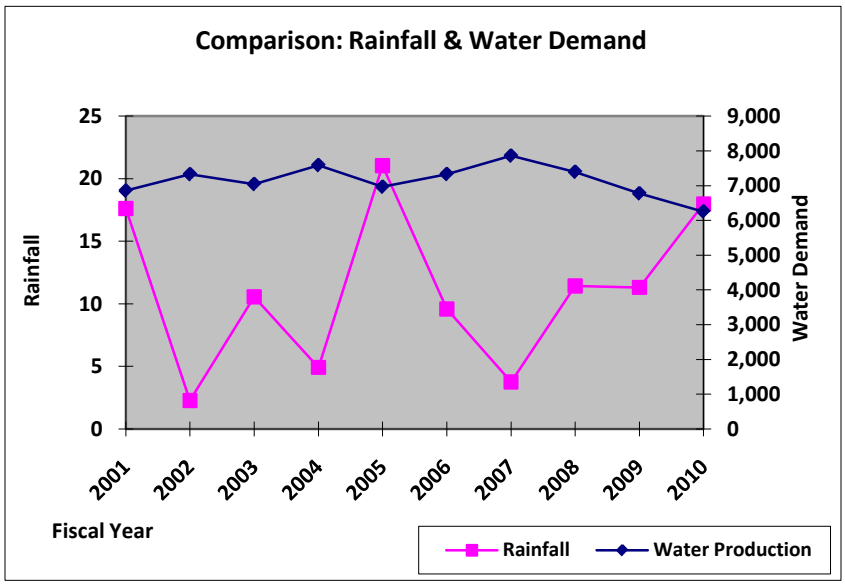
The Water Conservation Act of 2009 also allows water purveyors to meet the 20 percent by 2020 goal through a regional alliance, such as a wholesale supplier, a regional water management group, a hydrologic region or an integrated regional water management funding area. The members of the Los Angeles Gateway Region Integrated Regional Management Joint Powers Authority, an integrated water management funding area, have formed an alliance to comply with the provisions in the Water Conservation Act of 2009. Upon consideration and approval of the Letter of Agreement by the Lakewood City Council on May 24, 2011, the Lakewood Department of Water Resources became a member of this alliance.

The Gateway Authority hired GEI Consultants to gather population information and historic water demand to establish a regional baseline for the Gateway cities. GEI recommended using methodology #9 option #1 (M1 and M3), which establishes a base line of 114.6 gallons per capita per day. The proposed regional target for 2015 and 2020 is 109.4 and 104.2 gallons per capita per day respectively. The Los Angeles Gateway Region Integrated Regional Management Joint Powers Authority Board of Directors held a public hearing on May 12, 2011 to gather testimony, and reviewed the final report and adopted the target goals at the June 9, 2011 Board of Directors meeting. The 20x2020 Regional Alliance Target/Report is included in Attachment 1.

Both the City's 2020 target and the regional alliance target will be reviewed during the 2015 Urban Water Management Plan Update. At this time the methodology will be analyzed to determine if the option chosen best meets the needs of Lakewood and the Los Angeles Gateway Region Integrated Regional Management Joint Powers Authority.

Water Use Reduction Plan

Since Lakewood is primarily a residential community and most water use is outside the home for landscape irrigation, the Lakewood Department of Water Resources will target this type of water use to meet the per capita water use goal of 100 gallons per person per day. As the following chart illustrates, in the last ten years the water demand decreases as rainfall increases.



Reducing Residential Demand

In fall 2010 the City Council approved the implementation of two programs aimed to increase the effectiveness of water use for landscape irrigation of single family residential water customers. The program provides residential customers with rebates for the installation of water conserving irrigation devices and the removal of high water use turf areas. The rebate program was launched in February 2011, and submittal of rebate applications began May 1, 2011. The City Council allocated $25,000 for FY2011 and staff has requested continuation of the same funding level for FY2012.

Single family residential customers in Lakewood's service area can purchase and install a variety of water conserving devices including:

- Retrofit or installation of rotor nozzle/sprinkler heads
- Installation of weather based irrigation controllers
- Installation of irrigation controllers equipped with rain sensors or moisture sensors

- Installation of rain sensors or moisture sensors on existing irrigation controllers
- Installation or retrofit of irrigation system with drip irrigation kits
- Installation of hose end timers

The turf removal rebate program pays $1.00 per square foot of turf removed and replaced with drought tolerant plants, water conserving irrigation and a water permeable ground cover such as rock, bark or pavers. The project must be a minimum of 40 square feet and up to 80 square feet is eligible for the rebate. Unlike the device rebate the turf removal program, requires the submittal of a pre-application and a landscape plan for the proposed project. Once approval is received the resident has 60 days to complete the project. The water customer must commit to keeping the area turf free for five years to receive the rebate. Residents can link this rebate program with the device rebate offerings for a maximum rebate amount of $195.00. All rebates are awarded as a credit on the water bill. See Attachment 2 for the details in the water conservation device and turf removal rebate programs.

The Water Resources Department estimates the annual cost savings for a typical Lakewood home between $40 and $65. This assumes that a resident would retrofit the existing irrigation system with rotor sprinkler heads. The water savings are estimated at 14,000 to 20,000 gallons a year. A home with four occupants that reduces outdoor water use as predicted would save 9.5 to 13.7 gallons per person per day.

Reducing Commercial Water Demand

The Lakewood City Council adopted revisions to the Water Conservation in Landscaping Ordinance in 2009. These revisions require planned developments with a landscaped area greater than or equal to 2,500 square feet to submit a landscape plan that indicates the water budget, plant type and estimated water use. The landscape irrigation system must meet or better an average landscape irrigation efficiency of 0.71. The plan is reviewed and approved by the City of Lakewood Community Development Department. Upon completion of the approved landscape installation, the developer must submit an as built landscape plan prior to final approval of construction permits. Though Lakewood's water utility service is considered built out, redevelopment of commercial areas continues.

Since 2005, 29 projects have met the size provisions established in the Water Conservation in Landscape Ordinance. Though it is impossible to determine water savings through the provisions in this ordinance from future commercial projects, the installation and proper maintenance of low water use plant material and efficient irrigation systems, coupled with a water meter dedicated to irrigation use, will make it possible to monitor water use and ensure the compliance to the City's water conservation measures.

Section 4: System Supplies Water Sources

The City of Lakewood maintains four sources of water supply to meet customer demand: groundwater, imported surface water, recycled wastewater and emergency interconnections with other water retailers.

The City projects that the groundwater rights and allowable carry over currently owned by the utility will meet water demand during normal water supply periods for the 20-year planning period. Table 16 indicates FY2010 water production and projected water production for the City of Lakewood. As indicated, the groundwater and recycled supplies are expected to handle all projected use through 2030. The projections assume no expansion of the City's recycled water distribution system or the addition of recycled water customers. Table 16 estimates projected water production; based solely on water rights allocation, water storage program storage/extraction obligations and the recycled water contract with the City of Cerritos. The supplier produced groundwater includes the annual extraction allocation of 9,432 acre feet and 1,886 acre feet of maximum annual carryover. The carryover portion includes the water stored for the agreement with the Long Beach Water Department. This amount was not placed under water exchange in Table 16 due to two factors: the Central Groundwater Basin Judgment only allows a 20 percent carryover to the next fiscal year (unless a water supply emergency is declared) and the fluctuation of water stored and called through the execution of the water storage agreement cannot be accurately predicted.

Table 16 Water Supplies-- Current and Projected (Acre Feet)

Water Supply Sources		**2010**	**2015**	**2020**	**2025**	**2030**
Water Purchased from:	***Wholesaler Supplied Volume (yes/no)***					
CBMWD	Yes	0	0	0	0	0
Supplier produced groundwater		9,108	11,318	11,318	11,307	11,318
Supplier produced surface water		0	0	0	0	0
Transfers in						
Exchanges (Included in groundwater production)						
Recycled Water		444	450	450	450	450
Desalinated Water		0	0	0	0	0
Other		0	0	0	0	0
TOTAL		**9,552**	**11,768**	**11,768**	**11,768**	**11,768**

Import Water Supplies

Prior to 1991, the department met peak demand for potable water supply with imported water from Metropolitan Water District of Southern California (MWD). The City purchased this supply through one of two Central Basin Municipal Water District (CBMWD) connections. Each connection can supply water at a rate of 15 cubic feet per second. This supply is currently the most expensive of available sources of supply. CBMWD charges water purveyors $811 an acre foot for treated water.

Any need to return to purchasing MWD supplies would require significant operational changes. The City can, however, purchase limited additional supplies from the City of

Cerritos or Golden State Water Company through two emergency inter-connections.

Table 17 Wholesale Supplies—Existing and Planned Sources of Water

Wholesale Source	Contracted Volume	2015	2020	2025	2030
Central Basin Municipal Water District	0	0	0	0	0

Groundwater

The City currently relies on groundwater for 100 percent of its potable water supply. The installation of the recycled water distribution system in 1989 freed the City from dependence on supplementary import water from Metropolitan Water District of Southern California purchased through the Central Basin Municipal Water District.

Central Groundwater Basin

The City draws its supply from the Central Groundwater Basin. This source annually supplies approximately 200,000 acre feet of potable water to the area south of the Whittier Narrows to the Pacific Ocean and from the Orange County line to the city of Compton. The Central Groundwater Basin covers 277 square miles. According to *California's Groundwater Bulletin 118*, the basin's geologic boundaries are:

> Bounded on the north by a surface divide called the La Brea high, and on the northeast by emergent less permeable Tertiary rocks of the Elysian, Repetto, Merced and Puente Hills. The southeast boundary between Central Basin and 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.[5]

The physical characteristics of the Los Angeles Forebay, located at the Los Angeles River, and the Montebello Forebay, located at the Whittier Narrows, allow for the recharge of the Central Groundwater Basin. According to *California's Groundwater Bulletin 118*, these areas "have unconfined groundwater conditions and relatively interconnected aquifers that extend up to 1,600 feet deep…."[6] The Central Groundwater Basin consists of seven aquifers and aquicludes. The main freshwater bearing aquifers are the Gaspur, Gage, Gardena, Silverado, Lynwood and Sunnyside aquifers.

[5] California's Groundwater Bulletin 118, February 27, 2004.
[6] California's Groundwater Bulletin 118, February 27, 2004.

Central Groundwater Basin Water Bearing Zones[7]

Aquifer/ Aquiclude	Age	Formation	Lithology	Maximum Thickness (feet)
Gaspur	Holocene		Coarse sand, gravel	120
Semiperched	Holocene		Sand, gravel	60
Bellflower	Pleistocene	Lakewood Formation	Clay, sandy clay	140
Gardena	Pleistocene	Lakewood Formation	Sand, gravel	160
Gage			Sand	120
Silverado	Lower Pleistocene	San Pedro Formation	Sandy gravel	300
Lynwood			Coarse sand and gravel	150
Sunnyside				350

Groundwater Management Program

The Water Replenishment District of Southern California manages the Central and West Coast Groundwater Basins. Maintenance of the basin and the groundwater pumping allocation requires recharging; accomplished through facilities operated by the Los Angeles County Department of Public Works. The groundwater basin is replenished with three sources of water: import supplies from Metropolitan Water District of Southern California (MWD), local supplies from storm flows and allocations from the Upper San Gabriel Groundwater Basin, and recycled wastewater from the Sanitation Districts of Los Angeles County. The Water Replenishment District of Southern California (WRD) purchases import supplies and recycled wastewater for groundwater replenishment. The WRD also purchases import and recycled supplies to maintain seawater intrusion barriers.

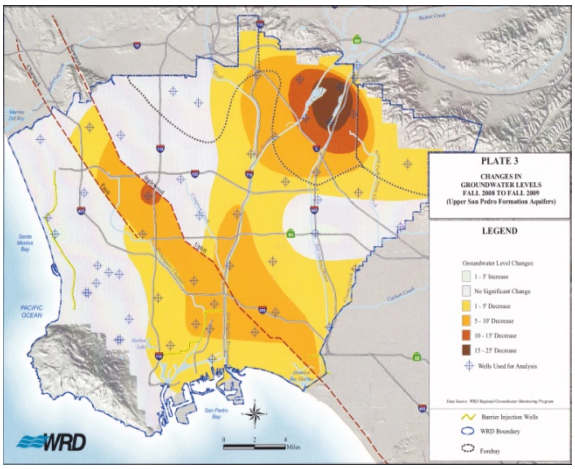
The table below indicates the historical recharge in the Central Groundwater Basin. The WRD optimizes the use of local and recycled water supplies to replenish the basin. As the table indicates the amount of water used for groundwater recharge has dropped from 203,473 acre feet in 2005 to 74,959 acre feet in 2009. This is due to the loss of import supplies from MWD. Attachment 3 is a table with the Central Groundwater Basin's historical groundwater recharge.

Until recently, the WRD offered groundwater producers a program that traded reduced import water supply costs in exchange for setting aside the annual groundwater pumping rights to remain in the ground. The bottom row of the table provides an historical prospective of groundwater recharge that occurred through the in lieu program.

[7] California's Groundwater Bulletin 118, February 27, 2004.

Historical Groundwater Recharge in the Central Groundwater Basin (acre feet)[8]

Type of Supply	*1990*	*1995*	*2000*	*2005*	*2009*
Import Water	52,700	21,837	45,037	25,296	0
Recycled Wastewater	50,109	33,300	43,271	29,504	39,611
Local Water	9,388	100,578	20,607	148,673	35,348
Makeup Water	13,600	0	0	0	0
TOTAL	**125,797**	**155,715**	**108,915**	**203,473**	**74,959**
Groundwater Recharge Through In Lieu Program	29,151	50,898	22,278	7,804	0



According the WRD, the groundwater levels have dropped over 15 feet due to the recent drought and the lack of MWD supplies for groundwater replenishment. A drop in the pumping levels has the potential for decreasing the accessibility of the groundwater. Producers are experiencing a 1 foot to 10 foot drop in water levels in Lakewood's service area. (See the adjacent map.)

Map to Right: Water Replenishment District of Southern California Engineering Survey and Report, May 11, 2010, Plate 3

Central Basin Adjudication

The Central Groundwater Basin became an adjudicated basin in 1966. See Attachment 4. The Los Angeles County Superior Court oversees the adjudication and the California Department of Water Resources serves as the court appointed Watermaster. The Court established groundwater pumping rights at the time of adjudication, and the total allowable extractions from the basin in a given year are 217,367 acre feet. Groundwater producers may also carry over up to 20 percent of the allowable pumping rights to the next fiscal year. The judgment also allows for the declaration of a water supply emergency as a means to maintain pumping levels in the groundwater basin. In fall 2010 the Water Replenishment District declared a water supply emergency, which allows pumpers to carryover an additional 35 percent of water extraction rights. The emergency declaration will remain in effect until June 30, 2011. The Cities of Downey, Cerritos, Signal Hill, and Central Basin Municipal Water District sued against implementation of drought carry over action.

Lakewood is a part of a group of pumpers seeking changes in the Central Basin Judgment. This group is seeking provisions that would allow groundwater producers to store water in the unused portion of the groundwater basin. The following are the key elements of the proposed groundwater storage plan framework:

- Establishes available storage in the Central and West Coast Groundwater Basins at 450,000 acre feet, of which 330,000 acre feet is available in Central Basin.

[8] *Water Replenishment District of Southern California Engineering Survey and Report 2010, Updated May 11, 2010*, Historical Amounts of Water for Replenishment A-4.

- Allows for the establishment of an Individual Storage Account for each water rights holder, and a Community Storage Pool Account.
- Allows the storage of water without replenishment fees or approvals.
- Increases the allowable carryover of unused water rights in a fiscal year from 20 percent to 100 percent, up to 20 percent to be placed into an Individual Storage Account and the remainder stored in the Community Storage Pool Account (stored on a first come first serve basis).
- Allows parties the ability to cumulatively store up to 200 percent of the party's annual extraction rights in Individual and Community Storage Pool Accounts.
- Provides for the extraction of stored water without fee or tax and reserves the space from that extracted water if replaced within 24 months.
- Provides a leave behind requirement for water stored over 10 years; 5 percent loss of stored water per year based on the lowest quantity held in storage during the 10 year period.
- Reaffirms the Water Replenishment District of Southern California's function as administrator of storage in the West Coast and Central Groundwater Basins with authority shared with a panel elected by water rights holders.
- Outlines the use of the Los Angeles County Department of Public Works spreading grounds for individual storage projects.
- Establishes guidelines for development of Water Rights Augmentation Projects, projects that require substantial capital costs to implement, and Regional Storage Projects that provide storage of water for beneficial use to parties within the basin through contracts with entities outside the region.
- Establishes guidelines for inter-basin transfer of stored water between the West Cost and Central Basins.
- Requires designated projects, i.e. Regional Water Projects, Water Augmentation Projects, extractions over 120 percent of extraction rights, and non-carryover conversion water storage projects, to be reviewed and approved. One or both Water Rights Panels and the WRD Board of Directors shall approve these projects by majority vote of each body.
- Removes the California Department of Water Resources as Watermaster and grants WRD Watermaster duties over administration and grants the pumpers' water rights panel responsibility over water rights.

The groundwater storage amendment to the Central Basin Judgment is currently pending legal decision by the Court.

Lakewood's Groundwater Production

The City of Lakewood owns 9,432 acre feet of groundwater rights in the Central Groundwater Basin. Table 18 contains the annual groundwater production for the City. The eleven groundwater production wells extract enough water to meet average and peak demand. The recycled water supply makes up the remainder of the City's total water supply. The map below generally locates all of the City's water production wells.

In FY2010 Lakewood pumped 9,108 acre feet of water, and carried over 1,836 acre feet to FY2011. Nine hundred acre feet of groundwater produced in FY2010 were transferred to Long Beach as a part of the conjunctive use program between Long Beach and Lakewood. An additional 900 acre feet of Lakewood's carryover water rights remain stored for future use by the Long Beach Water Department.

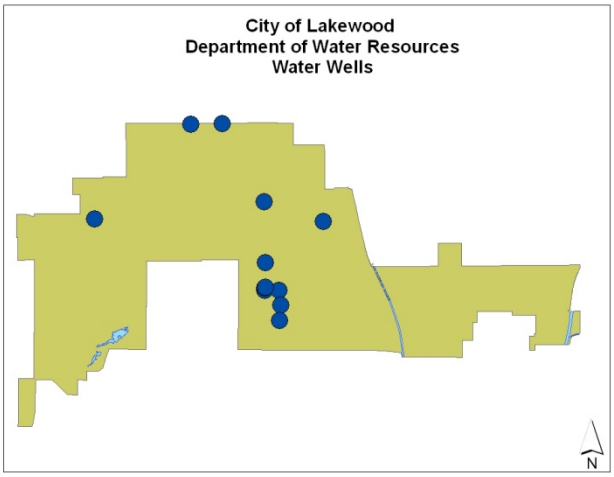


Table 18 **Groundwater Volume Pumped (acre feet)**

Groundwater Basin	Metered or Unmetered	FY2006	FY2007	FY2008	FY2009	FY2010
Central Groundwater Basin	Metered	9,234	9,965	9,472	8,679	9,108
Groundwater as a percent of total water supply[1]		100%	100%	100%	100%	100%

[1] Percent based on potable water supply.

Though the water levels in the Central Groundwater Basin have dropped over the last several years, with the exception of lowering the pump at Well #2A by 40 feet, Lakewood's production has not been directly impacted, nor has the water quality been affected. The raw water at all but one water production well meets all current state and federal drinking water standards. Only the supply from Well #27 requires treatment prior to entering the distribution system.

Lakewood expects to remain solely dependent on groundwater to meet potable water demands for the next 20 years. Table 19 indicates the projected groundwater extractions for FY2015, FY2020, FY2025 and FY2030. The estimates for FY2020 and 2030 include a call of 900 acre feet by the City of Long Beach. In order for this to occur, Long Beach would have to transfer a minimum of 900 acre feet to Lakewood.

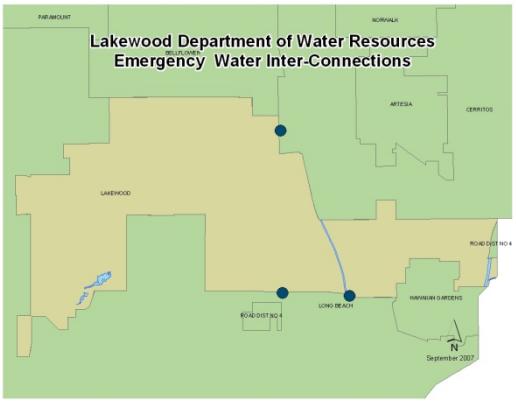
Table 19 **Groundwater—Volume to Be Pumped (acre feet)**

Groundwater Basin	2015	2020	2025	2030
Central Groundwater Basin	9,448	10,144	9,244	10,145
Percent of Total Water Supply[1]	100%	100%	100%	100%

[1] Percent based on potable water supply.

Transfer or Exchange Opportunities

The City of Lakewood currently maintains three emergency water supply inter-connections with adjacent water purveyors, the Cities of Cerritos and Long Beach, and Golden State Water Company. The existing Long Beach connection operates manually while the Cerritos and Golden State Water Company connections operate with an automatic bi-directional flow valve.



These connections have the potential for transfer or exchange of water supply during water shortages associated with water quality problems, disaster, drought and system maintenance. Each connection can provide up to 5,000 gallons per minute. All water that passes through any metered emergency interconnection is charged at the current rate charged by Metropolitan Water District of Southern California for non-interruptible water. The map to the left locates the emergency interconnections.

While Lakewood has the facilities to move water to and from neighboring utilities, and the ability to lease in/out access water rights to other utilities in the Central Basin, the likelihood of any projects that could augment the City's water supply is limited without revisions to the Central Basin Judgment. The increase in flexibility to store access water and participate in regional projects that could increase the reliability cannot take place unless the Court determines that this is a proper use of the groundwater basin. Lakewood has no plans to engage in additional transfer/exchange programs other than the existing agreement with the Long Beach Water Department.

Table 20 **Transfer and Exchange Opportunities**

Transfer Agency	Transfer or Exchange	Short Term or Long Term	Proposed Volume
None Planned in the Urban Water Management Planning Horizon	0	0	0
Total	0	0	0

Development of Desalinated Water

The City of Lakewood Department of Water Resources currently has no plans for the use of desalinated water to meet water supply demands. In September 2005 the Long Beach Water Department launched a demonstration and research project for the Long Beach Seawater Desalination Prototype Facility at the LADWP Haynes Generation Station in Long Beach. This facility served as a laboratory for refining desalination technology. This plant was located within a reasonable distance to Lakewood and could have provided a future water source for Lakewood. At this point the best and most economical desalter plants produce fresh water at about $1,302 per acre foot. The desalination process is very energy intensive; a one percent change in electrical power cost results in a $50/AF change in finished water cost. A project of this nature would require a regional approach to finance, construct and operate.

Recycled Water Opportunities

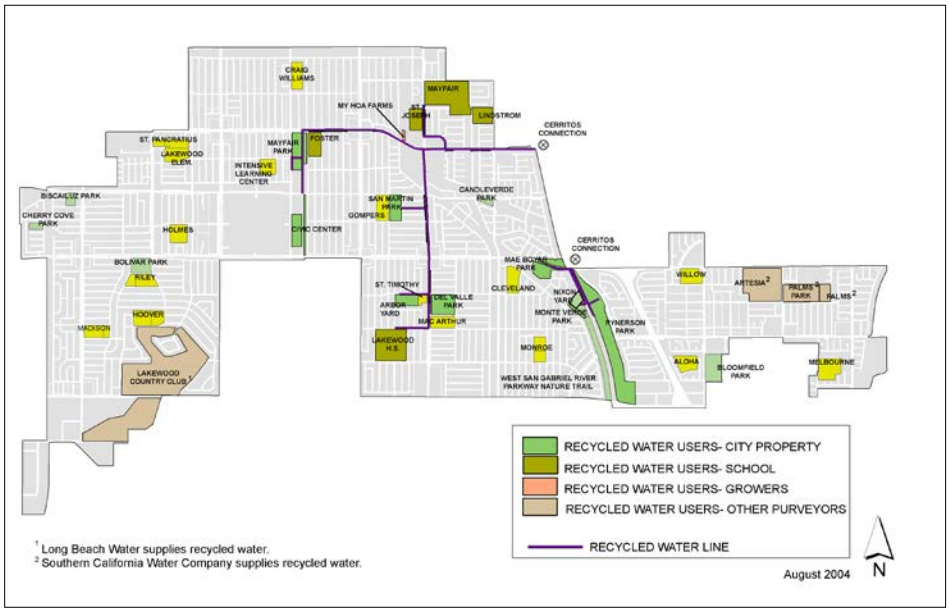
Southern California uses recycled water to meet water demands including landscape/agricultural irrigation, groundwater recharge, and industrial/commercial applications. Lakewood has operated a recycled water system since 1989. The table below indicates the agencies involved in the development of Lakewood's recycled water system.

Participating Agencies for Operation of Lakewood Recycled Water System

Type of Agency	*Agency*	*Role in Plan Development*
Water Agencies	City of Lakewood	Construction and Delivery of Recycled Water to the Community
	City of Cerritos	Maintains Pump Facility, Sells Recycled Water to Lakewood via Metered Connections
	Metropolitan Water District of Southern California	Incentive Program to Promote Recycled Water Use
	Central Basin Municipal Water District	Incentive Program to Promote Recycled Water Use (MWD Program Implemented through CBMWD)
Wastewater Agencies	Sanitation Districts of Los Angeles County	Treated Wastewater Supplier
Planning Agencies	California Department of Water Resources	Funding- Low Cost Loan for Construction of Recycled Water System

Over the past 20 years, the City of Lakewood has reduced its reliance on potable water by 8,787 acre feet or an average of 439 acre feet each year through the use of recycled water. The City's six mile recycled water distribution system connects to the Sanitation Districts of Los Angeles County's Los Coyotes Reclamation Plant through the City of Cerritos' recycled water production and distribution system. Cerritos operates a pump station at the reclamation plant, which can produce up to 12,000 GPM. The City of Lakewood maintains two metered service connections with the City of Cerritos. The map below identifies the recycled water connections to the Cerritos system, and the current recycled water customers.

City of Lakewood Recycled Water System



Wastewater Quantity, Quality and Current Uses

The Sanitation Districts of Los Angeles County maintain wastewater treatment plants in

the region. The Long Beach Water Reclamation Plant (WRP), 7400 E. Willow St., Long Beach, processes wastewater generated from Lakewood. The WRP's was designed to process 25 million gallons of wastewater a day. The average flow is currently 19 million gallons a day. Lakewood generates approximately 7.1 million gallons a day of wastewater.

The city of Lakewood receives its recycled water supply from the Sanitation Districts of Los Angeles County Los Coyotes Water Reclamation Plant. The plant influent averages 21.5 MGD of which 2.8 MGD is reused. The plant has the capacity to handle peak demand of 37.5 MGD. The Sanitation Districts of Los Angeles County has no plans for the expansion of the Los Coyotes Water Reclamation Plant. During the next several years the Districts is investigating projects (feasibility studies and pre design work) that would equalize the flow of the plants. While the size of the plant would remain the same the operational flexibility would improve. According the Sanitation staff, the San Jose Creek Water Reclamation Plant would be the first to be analyzed.

Table 21 Recycled Water-- Wastewater Collected & Treated (MG/Day)*

	2010	2015	2020	2025	2030
Wastewater Collected & Treated in Service Area	21.5	25.5	29.5	33.5	37.5
Volume Meeting Recycled Water Standard	21.5	25.5	29.5	33.5	37.5
Volume Reused	2.8	3.9	11.4	11.6	12.8

*Sanitation Districts of Los Angeles County Los Coyotes Reclamation Plant

Regionally, the potential for recycled wastewater use is greater than current use. In 2010, an average of 18.7 million gallons of treated wastewater escapes into the ocean every day, which could be beneficially reused. At the Los Coyotes Water Reclamation Plant, recycled water use limits are based on the pumping capacity and the timing of demand. Current recycled water demands are between 10:00 PM and 6:00 AM, which is when recycled water availability is the lowest. Cerritos upgraded the recycled pumps with variable frequency controllers used to distribute recycled wastewater to Bellflower, Cerritos, Lakewood and Central Basin Municipal Water District during 2006. The project increased reliability and energy efficiency, but not capacity.

Central Basin Municipal Water District (CBMWD) plans to construct the Montebello Loop, which would connect the recycled water distribution system served by the Los Coyotes Water Reclamation Plant with the water distribution system served by San Jose Creek plant. The inter connection of these systems will increase the District's flexibility, taking more water from San Jose Creek Water Reclamation Plant. This operational change could free pumping capacity at the Los Coyotes plant. This additional volume could be distributed from the Los Coyotes plant for direct customer reuse. The construction of a pipeline between Lakewood and Long Beach recycled water systems could transport the additional water available from the Los Coyotes plant to the Van Der Lans plant located in Long Beach for injection into the seawater intrusion barrier. Currently the Van Der Lans plant production relies on recycled water for 50 percent of its injection needs.

Table 22 Disposal of Non-Recycled Wastewater (AF/Year)

Disposal	Treatment Level	2010	2015	2020	2025	2030
To Ocean	Tertiary	18.7	21.6	18.1	21.9	24.7

Lakewood's Current Recycled Water Uses

The City currently maintains 41 service connections to the recycled water distribution system. Currently all recycled water is used for irrigation. Due to the residential/commercial composition of the community, the City expects all recycled use to remain for irrigation only. Five schools, City Hall and two City-owned maintenance yards, six parks and almost nine acres of parkway use recycled water for landscape irrigation. The City maintains one service connection with a commercial grower that uses this supply to maintain inventory. Since this water supply is used solely for irrigation, the demand is based on the weather. In hot dry years recycled water demand meets the projected demand of 450 acre feet. Wet years reduce recycled water demand. Table 23 breaks down the past and potential recycled water use by type.

Table 23 Recycled Water—Past & Potential Future Use (AF /Year)

User Type	Description	Feasibility	2005	2010	2015	2020	2025	2030
Agricultural Irrigation								
Landscape Irrigation	Park, school & traffic medians	Expansion Unlikely	352	444	450	450	450	450
Commercial Irrigation								
Golf Course Irrigation								
Wildlife Habitat								
Wetlands								
Industrial Reuse								
Groundwater Recharge								
Seawater Barrier								
Geothermal/Energy								
Indirect Potable Reuse								
		TOTAL	**352**	**444**	**450**	**450**	**450**	**450**

Table 24 compares the recycled water use projected for FY2010 in the 2005 Urban Water Management Plan by customer type. The actual use was slightly lower than the projected target of 450 acre feet. This may be due in part to the almost 18 inches of rain received during FY2010.

Table 24 Recycled Water Use—2005 UWMP Use Projection vs. 2010 Actual (AF/Year)

Type of Customer	FY2010 Actual Use	2005 Projection for FY2010
Agricultural Irrigation		
Landscape Irrigation	444	450
Commercial Irrigation		
Golf Course Irrigation		
Wildlife Habitat		
Wetlands		
Industrial Reuse		
Groundwater Recharge		
Seawater Barrier		
Geothermal/Energy		
Indirect Potable Reuse		
TOTAL	**444**	**450**

Recycled Water Incentives

The City's main incentive to encourage recycled water use is the difference in the quantity charge between recycled and potable water. Lakewood's recycled water quantitative rate

is significantly lower than the quantitative charge for potable water. Currently the recycled rate is $1.02 per hundred cubic feet compared to the potable rate of $2.17 per hundred cubic feet. Initially, the City provided financial assistance to the local school districts when connecting to the recycled water system. The City assisted in the installation of required backflow prevention devices to protect the public water supply. The City does not anticipate providing further incentives to encourage connection to the recycled water system due to the current differential in the quantitative charges between potable and recycled water.

The City can maintain the cost differential between recycled water charges and potable water charges due to an incentive program instituted by MWD. Lakewood receives a $154 per acre foot rebate for up to 450 acre feet of recycled water used through MWD's Local Projects Program (LPP). MWD engages in this type of incentive program to reduce the reliance on import water supplies. The contract between Lakewood and MWD expires in 2014; seven years beyond the repayment of the low interest loan from the State of California used to fund the construction of the distribution system.

The City of Lakewood's existing recycled water distribution system is essentially built out. The landscape areas along the existing system are not large enough to entice additional users. The potential for additional customers requires an extension of the system's pipeline. Therefore, as Table 25 indicates, Lakewood has no plans to market the recycled system during this Urban Water Management Plan planning horizon.

Table 25 Methods to Encourage Recycled Water Use (AF/Year)

Actions	Projected Results				
	2010	2015	2020	2025	2030
Financial					
Name of Action					
Name of Action					
TOTAL	0	0	0	0	0

Recycled Water System Expansion

The City of Lakewood examined potential expansion of the recycled water system. In fall 2009 the City contracted with Willdan Associates for the completion of a feasibility study regarding the expansion of the recycled water system. (Attachment 5 contains the complete study.) The study estimates build out of the recycled water system would result in approximately 608 acre feet sold annually; 159 acre feet of potential recycled water use. All potential uses are for landscape irrigation including: 8 large irrigation sites (parks and schools), and 49 metered parkways and traffic medians. The complete build out of the recycled water system would require the installation of an additional 40,700 linear feet of recycled pipeline. The cost of pipeline installation and service connections is estimated at $7,250,700. Currently Lakewood does not have the funds to construct this project. The large cost factor and the small incremental increase in the use of recycled water does not make this project economically feasible at this time. Grant funds would have to be made available to the city to proceed with the expansion project.

An additional factor that could influence the recycled expansion is Cerritos' ability to

provide additional recycled water. Cerritos personnel indicated that the existing system could meet Lakewood's additional recycled water needs. According to Cerritos staff the pumping facility and annual recycled water use could absorb an additional 159 acre feet of production.

Future Water Projects

The City of Lakewood's existing water production facilities are capable of producing groundwater supplies in normal, single dry and multiple dry years. The City's well field continues to age. Since the 2005 Urban Water Management Plan Update, four water wells have been taken out of service and properly destroyed. The volume of water produced in these wells dropped significantly as each of these wells reached the end of useful life. The City drilled two replacement wells, each producing approximately 2,500 gallons per minute. The City plans to drill and equip an additional well prior to the 2015 Urban Water Management Plan. Project design is expected to begin in FY2013, drilling and equipping completed by FY2015. The new well is expected to produce approximately 1,300 acre feet of the total groundwater extracted a year. The construction of a new well does not change the amount available for extraction. See Table 26 below.

Table 26 Future Water Supply Projects (Acre Feet per Year)

Project Name	Projected Start Date	Projected Completion Date	Potential Project Constraints	Normal Year Supply	Single Dry Year Supply	Multiple Dry Year First Year Supply	Multiple Dry Year Second Year Supply	Multiple Dry Year Third Year Supply
New Well	FY2013	FY2015	None	1,300	1,300	1,300	1,300	1,300
			TOTAL	**1,300**	**1,300**	**1,300**	**1,300**	**1,300**

SECTION 5: Reliability of Supply and Water Shortage Contingency Planning

Water Supply Reliability

The City expects the availability of groundwater supplies to remain constant over the next 20 years in this managed basin. The supply estimates are based on the annual allowable pumping rights and carryover from the previous year, which includes the water stored in the agreement with Long Beach Water Department. A severe single dry year or several consecutive dry years would not impact the City's ability to meet water demand.

Prolonged drought, more than multiple dry years, could result in a water supply shortfall. The City's ability to maintain reliable water supplies hinges on the maintenance of the groundwater basin. The Los Angeles County Department of Public Works operates two spreading grounds in the Central Basin: Rio Hondo and San Gabriel River. The ability to "stockpile" water during wet years increases the reliability in dry years.

A prolonged drought without recharge of the groundwater table could eventually lower the groundwater table and impact the ability to pump water from the basin. A significant drop in the groundwater table could mean the loss in groundwater production wells and additional seawater intrusion into the basin. The City estimates that a 50 percent loss in the groundwater supply would have to occur to affect the City's water production. If the drought lasted more than several years and no groundwater recharge occurred for at least two years, the City could lose two or three production facilities; that is the groundwater table would drop to a level that the water bearing strata would lay below the well perforations. In such situations the Watermaster could reduce the amount of allowed pumping allocation by local groundwater producers.

The Department of Water Resources can manage localized water supply shortages in several ways—leasing groundwater rights from other basin producers or purchasing water through Cerritos or Golden State Water Company emergency interconnections. These alternatives increase the cost of water production, but serve to meet the "short term gap" between demand and supply. For example, any water exchanged through the emergency interconnection is charged at the current rate for imported water from MWD. Though there are no additional costs associated with this water supply, MWD supplies cost approximately $811 per acre foot, over $400 per acre foot more than groundwater supplies.

Groundwater leasing remains a viable source of supply as long as the City's production facilities operate at existing levels. The cost of leasing groundwater rights fluctuates from year to year. The current rate is less than $120 an acre foot. The City allocates funds annually for the purchase or lease of groundwater extraction rights.

Changes in the Central Groundwater Basin Judgment could also allow greater flexibility to the groundwater producer. The utility's ability to store carryover water in excess of the current allowance of 20 percent would allow for banking water during wet years and

extractions during periods of drought without harming the overall operation of the basin. This proposed change is currently being challenged in the Court.

The long-term solution to water supply reliability lies in the ability to develop methods to reduce the amount of import water used for groundwater recharge. The Water Replenishment District of Southern California is looking at advanced treatment of wastewater to increase the amount of recycled water used for groundwater recharge.

Inconsistent Water Sources

The City does not rely on any inconsistent sources of potable water supply. The Court apportionment of water rights, which is managed by the Watermaster established property rights to the underground water resource. The Watermaster can call for a cessation of pumping, but prolonged drought and basin mismanagement would need to occur to lose this water supply.

Table 29 Factors Resulting in Inconsistent Supply

Water Supply Sources	Specify Source Name, If Any	Limitation Quantification	Legal	Environmental	Water Quality	Climatic	Additional Information
Groundwater		0	0	0	0	0	

Water Shortage Contingency Plan

Preparation for Catastrophic Water Supply Interruption

In 2003 the Lakewood Department of Water Resources prepared a vulnerability risk assessment for the U.S. Environmental Protection Agency in response to the amendments to the Safe Drinking Water Act. The assessment examined each water production facility for possible vulnerability associated with a variety of manmade and natural disasters. The department's emergency response procedures were updated based on the study's findings. The study contains highly sensitive information, and is therefore not available to the public.

Over the past twenty years the water utility has prepared for a catastrophic water supply interruption, including the purchase of emergency generators, installation of security measures, seismic retrofit of water storage facilities, development of communication systems and plans for emergency response. These emergency operations procedures are updated annually, and water personnel are routinely trained on emergency response procedures. Attachment 6 is an excerpt from the Lakewood Water Resources Departmental Emergency Operations Procedures Public Notification Plan. The department's emergency response plan outlines procedures for the following:

- Assessing water production and distribution facilities
- Implementing plans for breeches in water quality
- Distributing water to the community
- Repairing damage to the water system

In addition to planning for disasters, the Lakewood City Council has addressed mechanisms to implement and enforce water conservation measures.

Regional Power Outage

The Lakewood Department of Water Resources maintains three portable emergency generators and three stationary emergency generators to run the booster pumps at the water storage facilities. The portable generators can connect to eight different water wells, which provide the utility with significant flexibility. The electrical panels are identically wired for rapid installation and conversion to the portable generators. The stationary generators at the water storage facilities start automatically at the loss of electrical power. All emergency generators operate using diesel fuel. The City maintains a supply of diesel fuel at one of the City's maintenance yards. All generators are routinely run and tested under load. Testing and routine running allows for rotation of fuel. In 2008 the City installed a solar array on the roof of a 5.5 million gallon water tank at the Arbor Maintenance Yard. This solar array is connected to one of the boosters at Plant #4, and operates off the grid during partly cloudy and sunny days. The excess energy produced flows through a bi-directional meter to other Southern California Edison customers.

Earthquake

Since the mid-1990s the water utility has retrofitted water storage tanks to increase reliability during seismic activity. The interior structure of seven welded steel tanks contains reinforced framing to withstand significant ground shaking. The floor tank overflow drains were modified so that the pipe no longer penetrates the floor, which reduces the potential tearing in the event of storage tank movement. Additionally, each inlet and outlet has been retrofitted with flexible couplings that move with an earthquake. The utility maintains 11 water wells, which provide redundancy during emergency situations. The looped transmission lines can deliver water to all parts of the service area. The Emergency Operations Plan includes detailed checklist to determine the operational status of every water production facility, mechanisms to evaluate breaks in the water lines, and methods for addressing water quality issues.

Flooding

The Department of Water Resources service area is located in the Federal Emergency Management Agency's (FEMA) Flood Zone X. According to FEMA areas designated Zone X "are areas of moderate or minimal flood hazard." [9] Residents and businesses in this area are not required to purchase flood insurance.

Stages of Action

The water conservation plan contains six phases of action based on water supply conditions: voluntary phase, which remains in effect during normal supply conditions, to Phase 5 for shortages up to 50 percent. Table 35 places the shortages into stages and

[9] Federal Emergency Management Agency Letter if Map Revision (LOMR) to City of Lakewood January 11, 2002.

outlines the conditions for declaration of each stage. The Lakewood City Council can declare a water supply emergency by holding a public hearing and adopting a resolution. The resolution indicates the reason for the water supply emergency and the phase to be implemented. Attachment 7 is a sample of a resolution declaring a water supply emergency.

Table 35 Water Shortage Contingency- Rationing Stages to Address Water Supply Shortages

Rationing Stage	Water Supply Condition	% Shortage
Voluntary Phase	Normal Supply Conditions	<10%
Phase 1	Declaration of Drought by State or Regional Agency Calling 10% Reduction	10%>
Phase 2	Declaration of Drought by State or Regional Agency Calling 20% Reduction	<20%
Phase 3	Declaration of Drought by State or Regional Agency Calling 30% Reduction	<30%
Phase 4	Halt of Artificial Recharge of Groundwater Basin Over 3 Year Period	<40%
Phase 5	Halt of Artificial Recharge of Groundwater Basin Over 5 Year Period	<50%

Prohibitions, Penalties and Consumption Reduction Methods

The City began developing its water conservation plan in March 1990 as a result of lingering drought conditions. The Water Conservation Ordinance adopted in 1990 and revised in 1991 was amended again in 2009. The plan criterion includes:

- Providing a mechanism to prohibit water waste and penalize habitual water wasters
- Creating a fair and equitable water conservation rate structure that did not penalize customers already conserving water
- Creating an easily understood plan
- Allowing for effective enforcement of the plan
- Implementing an administratively feasible plan that did not require major increases in administrative costs, such as computer programming modifications and additional personnel

Water Waste Provisions

The City Council adopted general water use prohibitions in 1991, and amended the provisions in 2009. Some of these provisions are in effect regardless of water supply conditions. See Attachment 8 for the Water Conservation Ordinance 91-3, 91-13 and 2009-5. Table 36 indicates the type of water waste provisions contained in the City's water conservation ordinance. The following table summarizes the prohibitions imposed during the stages of water supply shortages.

Table 36 Water Shortage Contingency- Mandatory Prohibitions

Prohibited Water Use	Stage When Prohibition Becomes Mandatory
Use of Potable Water for Street Sweeping	At discretion of City Council
Uncorrected Plumbing Leaks	Normal Water Supply
Operating Decorative Fountains without Recirculating Water System	Normal Water Supply
Installation of Single Pass Cooling Systems Prohibited	Normal Water Supply
Installation of Car Wash without Recirculating Water System	Normal Water Supply
Serving Water at Public Eating Establishments Upon Request Only	Normal Water Supply
Construction or remodeling (50% or more) a commercial kitchen without water conserving spray valves	Normal Water Supply
Lodging Establishments serving customers without an opt out of daily linen service program	Normal Water Supply
Overspray Caused by Irrigation	Phase 1
Street/Sidewalk Cleaning	Phase 1 (Limits Use)
Washing Cars	Phase 1 (Limits Use)
Watering Lawns/Landscape	Phase 1 (Limits Use)
Non-permanent Agriculture	Phase 3 (Limits Use)

The loss of 50 percent or more of Lakewood's water supply would trigger the implementation of Phase 5 Mandatory Water Conservation. In a Phase 5 stage residential and commercial water used for landscape irrigation would be limited to watering only permanent trees and shrubs once a week during the summer and once every two weeks in the winter. Only watering with a bucket or drip irrigation system using no more than 2 gallons per hour would be permitted. Commercial growers would be limited to watering stock no more than once a week for no more than ten minute cycles per irrigation station. Parks and playgrounds using potable water for irrigation would be limited to twice a week for no more than 10 minutes per station.

The water conservation ordinance also allows customers to apply for an exemption from water use restrictions. The process for an exemption is outlined on the Request for Exemption from Water Use Restriction Form. Attachment 9 is a sample of the Request for Exemption from Water Use Restriction Form. The water conservation coordinator reviews each request and recommends to the Director of Water Resources the appropriate action. The ordinance allows the consumer appeal rights to the City Council. Failure to meet the water use restrictions can result in a fine and/or the turn off of water service to the property. The Water Conservation Ordinance does not provide relief from the water conservation rate structure. See section on Consumption Reduction Methods below.

Consumption Reduction Methods

The City incorporated a monetary means to reduce water use in the water conservation measures, which were initially implemented in 1991 and amended in 2009. Table 37 illustrates the type of consumption reduction measures outlined in the City's water conservation program.

Table 37 Water Shortage Contingency- Consumption Reduction Methods

Consumption Reduction Methods	Stage When Method Takes Effect	Projected Reduction
Education Program	Normal	Not Quantified
Water Shortage Pricing	Voluntary	Depends on the Conservation Phase 10-<30% Implemented
Voluntary Rationing	Voluntary	<10%
Use Prohibitions	Normal-Phase 5	<10%-40%
Flow Restriction on Water Use Restriction Violators	Phase 1	<1%
Reduce Pressure in Water Lines	Phase 2	8-10%

The City's water rate structure does not require the water customer to reduce water use based on historical demand. Instead the City separates the water customers into 28 classifications, e.g. single family residential, large grocery stores, theaters, department stores, and fast food establishments. In 2009 the City added three categories for landscape irrigation (potable water users), a category for store front businesses and categories for launder mats, hair and nail salons, and ice rinks. The City analyzed the historical water use for each water use classification and established consumption tiers based on total historical water use in each classification. The additional categories were developed to tighten the water use ranges and encourage conservation. Attachment 10 is the current water conservation rate structure.

The premise of this rate structure is simple, the more you use the more you pay. A consumer using water that exceeds the first and subsequent tiers would be charged for excessive use. The rate increases progressively; the greater the water supply shortage the steeper the excessive use charge. The excessive water use charge is calculated only on the amount of water used over each tier.

The City designed the water conservation rate structure to allow those customers already conserving to remain unaffected by the implementation in conservation rates. In the voluntary phase a customer must use over four times the average residential consumption to receive an excessive use charge on the water bill. Excessive use charge during a Phase 3 water supply shortage begins when a customer uses more than the citywide average for the water use classification. The table below lists the water use classifications, the type of account and the percentage of the total accounts in the classification.

Lakewood's Water Use Classifications

Water Use Classification	Description of Account Type
Single Family Residential	Detached homes without differentiating lot size
Multiple Family Residential	Based on the number of units connected to the water meter
Duplex Residential	Two residential units
Auto Related Business	Gas stations & auto repair shops
Churches	Churches without school facilities
Supermarkets	Large food store chains
Theaters	Multiple movie theater centers
Car Washes	Car washes without recycling equipment
Fast Food Restaurants	Large volume fast food establishments
Fast Food Restaurants	Small volume fast food establishments
Small Food Stores	Grocery stores not associated with a supermarket chain
Medical/Dental Offices	Professional medical facilities excluding hospitals
Commercial Nurseries & Growers	Christmas tree farms & local growers
Restaurants, Lounges & Taverns	All non-fast food establishments
Schools	Elementary schools
Schools	Junior & senior high schools
Commercial Storefront	Small commercial business
Commercial Centers	Small commercial shopping centers
Commercial Large	Large commercial shopping centers
Motels	Based on the number of units connected to the water meter
Coin Operated Laundry	Laundry facilities
Hair and Nail Salon	Hair, nail and facial salons
Department Stores	Large retail department stores
Ice Rinks	Ice rinks
Landscape Irrigation Small Area	Typical water use below 11 hcf per month
Landscape Irrigation Medium Area	Typical water use below 81 hcf per month
Landscape Irrigation Large Area	Typical water use below 441 hcf per month
Exempt	Hospitals, recycled water user, recycled car washes

The water conservation rate structure exempts recycled water users, hospitals and recycled car washes, but these customers are not exempt from the water use restrictions.

Penalties and Charges

The Water Conservation Ordinance includes excessive water use penalties. While the City does not restrict the use of water consumed, the consumer that uses more than the average in the water rate classification does pay more for the extra water consumed. The greater the water use the greater the excess charge.

The ordinance also provides a mechanism to penalize consumers for violation of the water use restrictions. These penalties range from a warning to the termination of water service. The ordinance also includes provisions to write citations and charge fees for violation of water use restrictions.

As Table 38 illustrates, an individual failing to comply with the mandatory water use restrictions is issued a citation for improper water use. The penalties gradually increase with subsequent violations. The 2009 amendment to the Water Conservation Ordinance increased the fine for violations to the ordinance.

Table 38 Water Waste Penalties & Charges

Penalty or Charges	Stage When Penalty Takes Effect
Penalty for Excess Use	Voluntary
Charge for Excess Use	Voluntary
First Violation: Written Warning Notice	Normal Water Supply
Second & Third Violations: Written Notice of Violation & $100.00 (payable in no more than 15 days)	Normal Water Supply
Fourth Violation: Written Notice of Violation, $200.00 & Installation of Flow Restrictor (Restrictor shall remain in place for no less than 24 hours & customer must pay fees prior to removal.)	Normal Water Supply
Fifth & Subsequent Violations: Written Notice of Violation, $500.00 & Installation of Flow Restrictor (Restrictor shall remain in place for no less than 48 hours & customer must pay fees prior to removal.)	Normal Water Supply

Analysis of Revenue Impacts of Reduced Sales during Water Shortages

The estimated revenue from the water conservation rate structure is not expected to relieve the City from the anticipated shortfall. In fact, in phases four and five the amount of revenue from the water conservation rate structure is expected to diminish due to the additional water use restrictions for outdoor water use. The City expects that those commercial customers that cannot further reduce consumption will continue to pay the excessive use charges.

The City collects approximately $9.7 million annually from water sales. Based on average annual potable water sales of 10,998 acre feet (See Table 28) a 50 percent loss in water sales would reduce production to 5,499 acre feet. Without the implementation of additional water rate increases above and beyond the water conservation rate structure or the reduction in capital or operating expenditures, the City's estimated loss in water revenue would total $3.3 million in a Phase 5 water supply shortage, as indicated in the table below. The decrease in water sales is only partially offset by avoided maintenance and operating costs: decrease in the groundwater extraction fees, energy costs associated with the large decrease in water use and other incidental expenses. The anticipated avoided costs would total $1,579,700, not enough to make up the loss in revenue. The City Council would need to raise water rates and/or further cut operating costs.

Actions and Conditions that Impact Revenues & Expenditures

Type of Revenue	Anticipated Revenue Reduction Phase 5 Water Shortage	Type of Expenditure	Anticipated Expenditure Increase/Decrease
Water Sales	$3,283,200	Reduction in Groundwater Extraction Fees	$1,127,300
		Reduction in Energy Costs	$250,000
		Reduction in Incidental Costs	202,400
TOTAL	$3,283,200		$1,579,700

The table labeled Fiscal Impact of Drought Conditions without Changes to Utility

Operations below indicates the revenues and expenditures without change to utility operations or increases in quantity charges. This table reduces the maintenance and operations expenditures for energy and groundwater extraction fees to match the reduction in demand as indicated above, but makes no other changes in operation or capital expenditures. As the table indicates, the ending balance for a Phase 4 water supply shortage would result in a $2.6 million shortfall, and a $2.9 million shortfall in a Phase 5 water supply shortage.

The second table assumes the same reductions in the quantity of water and the same operational expenditures, but decreases the capital expenditures from $2.05 million in a normal water supply year to $950,976 in Phases 4 and $660,714 in Phase 5. The reduction in capital projects still leaves a negative balance of $1,502,382. The funds for the limited capital improvement plan would be financed through water fund reserves, and result in delays to replace aging infrastructure.

Fiscal Impact of Drought, Conditions without Changes to Utility Operations

	Normal	Voluntary	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
	0%	5%	10%	20%	30%	40%	50%
Operating Revenue	$ 9,700,795	$ 9,375,394	$ 9,041,649	$ 8,457,596	$ 7,759,235	$ 7,053,115	$ 6,417,607
Operating Expenses	$ 9,136,056	$ 8,925,053	$ 8,787,816	$ 8,513,341	$ 8,195,423	$ 7,901,597	$ 7,556,351
Net Operating Income	$ 564,739	$ 450,340	$ 253,833	$ (55,746)	$ (436,187)	$ (848,482)	$ (1,138,744)
Adjusted Net Operating Income[(1)]	$ 1,618,949	$ 1,504,551	$ 1,308,043	$ 998,465	$ 618,023	$ 205,729	$ (84,534)
Non-Operating Income	$ 257,884	$ 257,884	$ 257,884	$ 257,884	$ 257,884	$ 257,884	$ 257,884
Net Revenue	$ 1,876,833	$ 1,762,435	$ 1,565,927	$ 1,256,349	$ 875,907	$ 463,613	$ 173,350
Debt Service	$ 1,015,018	$ 1,015,018	$ 1,015,018	$ 1,015,018	$ 1,015,018	$ 1,015,018	$ 1,015,018
Available for Capital Projects	$ 861,815	$ 747,417	$ 550,909	$ 241,331	$ (139,111)	$ (551,405)	$ (841,668)
Total Capital Projects[(2)]	$ 2,053,291	$ 2,053,291	$ 2,053,291	$ 2,053,291	$ 2,053,291	$ 2,053,291	$ 2,053,291
Ending Balance	$ (1,191,476)	$ (1,305,874)	$ (1,502,382)	$ (1,811,960)	$ (2,192,402)	$ (2,604,696)	$ (2,894,959)

(1) Less depreciation expense
(2) Major funding source is an investment from the Utility's Reserves

Fiscal Impact of Drought, Conditions with Changes to Utility Operations

	Normal	Voluntary	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
	0%	5%	10%	20%	30%	40%	50%
Operating Revenue	$ 9,700,795	$ 9,375,394	$ 9,041,649	$ 8,457,596	$ 7,759,235	$ 7,053,115	$ 6,417,607
Operating Expenses	$ 9,136,056	$ 8,925,053	$ 8,787,816	$ 8,513,341	$ 8,195,423	$ 7,901,597	$ 7,556,351
Net Operating Income	$ 564,739	$ 450,340	$ 253,833	$ (55,746)	$ (436,187)	$ (848,482)	$ (1,138,744)
Adjusted Net Operating Income[(1)]	$ 1,618,949	$ 1,504,551	$ 1,308,043	$ 998,465	$ 618,023	$ 205,729	$ (84,534)
Non-Operating Income	$ 257,884	$ 257,884	$ 257,884	$ 257,884	$ 257,884	$ 257,884	$ 257,884
Net Revenue	$ 1,876,833	$ 1,762,435	$ 1,565,927	$ 1,256,349	$ 875,907	$ 463,613	$ 173,350
Debt Service	$ 1,015,018	$ 1,015,018	$ 1,015,018	$ 1,015,018	$ 1,015,018	$ 1,015,018	$ 1,015,018
Available for Capital Projects	$ 861,815	$ 747,417	$ 550,909	$ 241,331	$ (139,111)	$ (551,405)	$ (841,668)
Total Capital Projects[(2)]	$ 2,053,291	$ 2,053,291	$ 2,053,291	$ 1,743,713	$ 1,363,271	$ 950,976	$ 660,714
Ending Balance	$ (1,191,476)	$ (1,305,874)	$ (1,502,382)	$ (1,502,382)	$ (1,502,382)	$ (1,502,382)	$ (1,502,382)

Water Shortage Ordinance/Resolution and Water Use Monitoring Procedures

On February 28, 1991 the Lakewood City Council adopted a Water Conservation Ordinance No. 91-3 and instituted a Phase 1 water supply shortage following public hearings. The ordinance was adopted as an urgency ordinance based on the need to protect the public health and safety. On March 1, 1991 the Council adopted a water conservation rate structure, which instituted a financial "incentive" for customer conservation. The City Council adopted the rate resolution after a public hearing and two readings by the Council. The original ordinance included the mechanism to institute a water supply emergency and initiate water use restrictions, penalties for wasting water, and the water conservation rate structure. The ordinance consists of six water supply shortage phases for a 10, 20, 30, 40 and 50 percent water supply shortage. The rate structure includes three mandatory water conservation measures.

The City's implementation of any phase of the water conservation plan is based on the existing and predicted water supply outlook as determined by the State Department of Water Resources, Metropolitan Water District of Southern California, Central Basin Municipal Water District and the Water Replenishment District of Southern California. The implementation of the water conservation ordinance or movement from one phase to another is accomplished by the adoption of a City Council resolution. This resolution enacts the appropriate water use restrictions and the corresponding water conservation rate structure. Attachment 7 is a sample of the City Council Resolution.

The City uses historical production data to determine the effectiveness of water conservation programs. Staff analyzes daily, weekly and rolling four week production. Additionally, the City monitors water use, especially accounts that use amounts over the water conservation rate structure tiers. This analysis can indicate the success of the public education portion of the water conservation program. While the City expects a low percentage of customers' use to exceed the first tier, a gradual decrease in consumption should occur as the drought continues. Failure of the community to respond to the request to conserve water would force the implementation of additional water conservation measures.

Water Use Monitoring Mechanisms

Mechanisms for Determining Actual Reductions	Type and Quality of Data Expected
Analysis Daily Consumption Analysis Weekly Consumption Analysis Rolling 4 Week Average	Data for all production analysis is numerical data from water production meters at each well, which are tested annually to fall within a +/-3%. Data is collected daily.
Analysis Water User Exceeding Average Tier	Extrapolate users exceeding the typical water use to target additional water conservation message. This information is collected bi-monthly. In extreme water supply shortages the water meters could be read on a monthly basis.

Water Quality

The Department of Water Resources does not anticipate a change in water supply reliability due to water quality. Groundwater quality in the area of the City's water

production facilities remains consistent. However, any variation in groundwater quality would not change the amount of water that could be extracted in an adjudicated groundwater basin, like Central Basin. Changes in water quality could prompt water production personnel to change operational procedures, but the total groundwater production would not change.

Table 30 Water Quality—Current and Projected Water Supply Impacts (AF)

Water Source	Description of Condition	2010	2015	2020	2025	2030
Well #2A	None anticipated	0	0	0	0	0
Well #4	None anticipated	0	0	0	0	0
Well #8	None anticipated	0	0	0	0	0
Well #10	None anticipated	0	0	0	0	0
Well #13A	None anticipated	0	0	0	0	0
Well #14	None anticipated	0	0	0	0	0
Well #15A	None anticipated	0	0	0	0	0
Well #17	None anticipated	0	0	0	0	0
Well #18	None anticipated	0	0	0	0	0
Well #22	None anticipated	0	0	0	0	0
Well #27	Water Supply Already Treated Prior to Placing into Water Storage Facility	0	0	0	0	0
		0	0	0	0	0

New regulations by the California Department of Health Services and/or the U.S. Environmental Protection Agency may require the addition of water treatment facilities. In addition to the treatment plant at Well #27 for arsenic removal, Lakewood plans to install a treatment plant at Well #22 for the removal of total organic carbons and dissolved sulfides. Changes in regulations may result in the treatment of all groundwater supplies. Lakewood has planned for centralized water treatment, by citing new water wells near existing water storage facilities. Water from new wells would discharge into storage before entering the distribution system. Any need for treatment for multiple water supplies could be placed on reservoir sites, so the water could be treated prior to storage.

Drought Planning

Estimating Minimum Water Supply- Normal, Single Dry and Multiple Dry Years

Lakewood averages 12-14 inches of rain annually. However, the lack of rainfall in a single year or over multiple years does not provide a good indicator of the availability of water in the Central Groundwater Basin. For this reason Lakewood also examined the amount of local water used in groundwater replenishment as an indicator. Table 27 indicates the years chosen for normal, single dry and multiple dry year water supplies.

Table 27 Basis of Water Year Data

Water Year Type	Base Year(s)
Average Water Year	FY2008
Single-Dry Water Year	FY1990
Multiple-Dry Water Years (3-Year Period)	FY1989 to FY1991

Table 28 indicates the historic conditions during those years listed in Table 27. Lakewood's water supply for each of the years listed in Table 28 is based on a total of the following: groundwater extractions, purchased water from Central Basin Municipal Water District, carryover pumping rights from the previous year and purchased recycled water from the City of Cerritos.

Table 28 Supply Reliability- Historic Conditions (AF)

		Multiple Dry Years		
Average/Normal Water Year	**Single Dry Water Year: FY1990**	**Year 1: FY1989**	**Year 2: FY1990**	**Year 3: FY1991**
10,998 AF	10,847 AF	10,757 AF	10,847 AF	10,428 AF
% of Normal Year	99%	98%	99%	95%

Normal Water Supply Year

Using local water (runoff entering the groundwater basin) and rainfall as criteria, Lakewood determined that FY2008 is the closest to meeting the criteria for the average water year. Local water for groundwater replenishment was at 55,000 acre feet, the 55-year average, and local rainfall for the year was 11.43 inches, according to the Los Angeles County Department of Public Works Climatological Record Montana Station 225. Groundwater production for FY2008 was 9,472 acre feet and 1,069 acre feet of water rights was carried over into FY2009. Recycled water purchased from Cerritos was 457 acre feet in FY2008. Total water supply available to Lakewood in FY2008 was 10,998 acre feet. (See Table 27 & 28.)

Single Dry Water Supply Year

Lakewood chose FY1990 as the single dry year. (See Table 27 & 28.) Only 9,388 acre feet of local water was captured for groundwater replenishment and the area received 5.51 inches of rainfall in FY1990. Lakewood's total available water supply was 10,847 acre feet in FY1990: groundwater extractions-- 9,168 acre feet, import water purchases from Central Basin Municipal Water District-- 688 acre feet, recycled water purchases from Cerritos-- 359 acre feet (first year of recycled water system operations), and available carryover-- 632 acre feet. Lakewood owned 8,921 acre feet of water rights in FY1990, so meeting demand required the use of carryover water rights. Of the 1,784 acre feet of allowable carryover water rights, Lakewood used 1,152 acre feet.

Multiple Dry Water Supply Years

Lakewood chose FY1989 to FY1991 as the multiple dry year period. (See Table 27 & 28.) The average rainfall for this period was 33.69 inches. The years chosen were not the driest years since 1970; FY2001-02 rainfall 2.27 inches, and FY2002 through FY2004 rainfall totaled 17.75 inches. However these years have the lowest local water used for groundwater recharge. The lowest three year average replenishment using local water occurred during a period between Fiscal Year 1989 and Fiscal Year 1991. Only 62,201 acre feet of water was captured in the local spreading grounds during this multiple year

period.[10] (See Attachment 3 for the historical amounts of water used for Central Basin recharge.)

As Table 28 indicates, the City of Lakewood's water production dropped during the multiple-dry year period compared to the normal water supply year, but the availability of the groundwater extraction rights did not change during this period. The City still maintained the ability to extract the annual pumping rights allocation and carryover water from the previous fiscal year, so the percent of normal does not provide a clear picture of water reliability.

Current Water Supply Reliability

As a groundwater producer, Lakewood enjoys the security associated with an adjudicated groundwater basin. The three-year minimum water supply would be based on the adjudicated groundwater extraction rights held by the utility. Lakewood currently owns 9,432 acre feet of extraction rights, and maximizes its allowable 20 percent carryover or 1,886 acre feet (total extraction rights of 11,318 acre feet). The Watermaster, which oversees the execution of the judgment, controls the extraction of water from the Central Groundwater Basin, and could call for a reduction in groundwater extraction during prolonged drought. Though this type of restriction has not occurred since the adjudication of the basin, a long-term cessation of recharge could trigger such action. Table 31 indicates the amount of water that is currently available to Lakewood water customers. The groundwater extraction is the total annual pumping allocation and 20 percent carryover. Recycled water is demand driven. The purchase of recycled water is based on customer demand, which varies based on local rainfall.

Table 31 Supply Reliability—Current Water Sources (AF)

		Multiple Dry Water Year Supply		
Water Supply Source	**Average/Normal Water Year Supply**	**FY2011**	**FY2012**	**FY2013**
Groundwater	11,318	11,318	11,318	11,318
Recycled Water	450	450	450	450
TOTAL	11,768	11,768	11,768	11,768
Percent of Normal Year	100%			

The following tables project various scenarios regarding the reliability of the City's water supply during normal, single dry year and multiple dry years. These calculations are based on the percent of normal supply used in Table 28, but in reality unless the Central Groundwater Basin Watermaster further limits groundwater production the available water supply would remain the same through normal, single dry and multiple dry years.

As Table 32 indicates under normal conditions Lakewood's water supplies are in excess of demand through 2030.

[10] Water Replenishment District of Southern California Engineering Survey and Report May 11, 2010, Historical Amounts of Water for Replenishment, A-4

Table 32 Supply and Demand Comparison Normal Year

	2015	2020	2025	2030
Supply Totals (from Table 16)	11,768	11,768	11,768	11,768
Demand Totals (from Table 11)	9,898	10,594	9,694	10,595
Difference	1,870	1,174	2,074	1,173
Difference as % of Supply	16%	10%	18%	10%
Difference as % of Demand	19%	11%	21%	11%

Single Dry Year Water Supply

The calculations in Table 33 indicate an excess of water supply in a single dry year. This calculation was based on 99 percent of the normal water supply year indicated in Table 28. Fiscal Years 2020 and 2030 drop to two percent due to the inclusion of a call on the water stored for Long Beach Water Department. As previously indicated only 900 acre feet can be called in a year, but the timing for the storage and call for this supply is based on MWD's water supply outlook.

Table 33 Supply and Demand Comparison Single Dry Year

	2015	2020	2025	2030
Supply Totals	10,847	10,847	10,847	10,847
Demand Totals	9,898	10,594	9,694	10,595
Difference	949	253	1,153	252
Difference as % of Supply	9%	2%	11%	2%
Difference as % of Demand	10%	2%	12%	2%

Multiple-Dry Year Supply

The multiple-dry year scenario is based on a reduction of water between 95 and 99 percent (see data in Table 28). This scenario is also affected by the projection of a call for Long Beach's stored water in 2020 and 2030. Based on these calculations Lakewood would see a 2 percent gap between supply and demand. This scenario would require the implementation of mandatory water conservation or the purchase of leased groundwater rights, if available.

Table 34 Supply and Demand Comparison Multiple Dry Years

		2015	2020	2025	2030
Multiple Dry Year First Year Supply	Supply Totals	10,757	10,757	10,757	10,757
	Demand Totals	9,898	10,594	9,694	10,595
	Difference	859	163	1,063	162
	Difference as % of Supply	8%	2%	10%	2%
	Difference as % of Demand	9%	2%	11%	2%
Multiple Dry Year Second Year Supply	Supply Totals	10,847	10,847	10,847	10,847
	Demand Totals	9,898	10,594	9,694	10,595
	Difference	949	253	1,153	252
	Difference as % of Supply	9%	2%	11%	2%
	Difference as % of Demand	10%	2%	12%	2%
Multiple Dry Year Third Year Supply	Supply Totals	10,428	10,428	10,428	10,428
	Demand Totals	9,898	10,594	9,694	10,595
	Difference	530	-166	734	-167
	Difference as % of Supply	5%	-2%	7%	-2%
	Difference as % of Demand	5%	-2%	8%	-2%

This scenario is not likely unless the number of dry years continues past three years, and the Water Replenishment District is unable to provide an adequate water supply to keep basin extractions at levels currently approved by the Court.

Section 6: Demand Management Measures

Implemented Demand Management Measures

The State of California Department of Water Resources in conjunction with the State Water Coalition developed the Memorandum of Understanding Regarding Urban Water Conservation (MOU) in California. These conservation measures are commonly referred to as Best Management Practices (BMP). The purpose of the document is to gain cooperation among water agencies and the environmental community to increase reliability of the state's water supply, establish state-wide standards for water conservation, eliminate high water conservation quotas and promote uniformity in the implementation of water conservation measures. The State Department of Water Resources encourages water purveyor participation in the MOU. Lakewood is not a signatory of the MOU.

Water Survey Programs for Single-Family and Multifamily Residential Customers

The department offers water audit services to all water customers. Staff members work with the water customers to check for leaks, check water using fixtures, irrigation and landscape. The customer is also given instruction on how to read the water meter and water utility bill. Staff makes written recommendations based on the customer's water use practices. Attachment 11 is the City of Lakewood Residential Water Audit Checklist. Requests for this type of service occurred frequently during the drought in the early 1990's. During this period of time the City promoted the service to meet conservation needs. Since 1990 the Department of Water Resources has conducted 86 water audits, but has not calculated the water savings associated with the surveys. The Department of Water Resources advertises this service in the annual water quality report. See Attachment 12.

In addition to the formal water audit, staff provides additional customer service that promotes water conservation. The water utility personnel began using handheld meter reading devices to gather consumption data in 1990. These devices allow for the detection of excessive water use based on the historical water use for the service address. Water meter reads that exceed the customers' "normal" range of use trigger an alert to the meter reader. Staff follows up on high reads with an investigation. The City rereads the meter and contacts the customer to inform them of a possible leak. The department staff assists customers in finding the leak, so that a qualified plumber can make appropriate repairs. The department does not track the number of contacts made to notify a customer of high water use triggered by the meter read. The table below indicates the number of times the department has responded to a request by the customer to assist with locating water leaks.

Water Customer Leak Detection Service

	2009	***2010***
# Customer Contacts	155	170
Percent of Residential Customers	1%	1%
Expenditures	No additional associated costs.	
Water Savings	Data Not Calculated	

Residential Plumbing Retrofit

The City's plumbing codes reflect county and state laws regarding the use of water conserving devices. State law requires that all showerheads sold in California must meet a standard of 2.5 gallons per minute or less. Toilets can be retrofitted with displacement devices that reduce the amount of water used up to 4.2 gallons per day, and water faucets can be fitted with aerators that save approximately 1.5 gallons per day.

The City has not implemented a program to retrofit low-flow showerheads, water displacement devices for toilets and faucet aerators, because the cost of the program outweighs the benefit. A residential plumbing retrofit program that reaches 75% of the water customers would require the purchase of 15,371 aerators, toilet dams and low flow showerheads. The total cost of the devices, not including the cost of staff to promote and implement the program, would cost $260,500. Acknowledging that a percentage of the water customers would fail to install the devices, and estimating the life span of the devices at three to seven years, results in a savings of 97 acre feet of water annually or 498 acre feet over the life of the devices.

Since Lakewood is primarily a residential community and most water use is outside the home for landscape irrigation, the Lakewood City Council recently implemented a program to target outdoor water use. In fall 2010 the City Council approved the implementation of two programs aimed to increase the effectiveness of water use for landscape irrigation. The program provides residential customers with rebates for the installation of water conserving irrigation devices and the removal of high water use turf areas. The rebate program was launched in February 2011, and applications for the rebates began in May 1, 2011. The City Council allocated $25,000 for FY2011 and staff has requested continuation of the same funding level for FY2012.

Single family residential customers in Lakewood's service area can purchase and install a variety of water conserving devices including:

- Retrofit or installation of rotor nozzle/sprinkler heads
- Installation of weather based irrigation controllers
- Installation of irrigation controllers equipped with rain sensors or moisture sensors
- Installation of rain sensors or moisture sensors on existing irrigation controllers
- Installation or retrofit of irrigation system with drip irrigation kits
- Installation of hose end timers

See Attachment 2 for the details in the water conservation device rebate program.

Though Central Basin Municipal Water District and Metropolitan Water District of Southern California provide similar programs for the weather-based irrigation controllers and rotor nozzles, Lakewood expanded the conservation program to include devices that a homeowner can afford and a do-it-yourselfer can install, i.e. drip irrigation kits. The last several phases of the mandatory conservation program limit watering with a bucket or drip irrigation system. The installation of drip irrigation will place the water in the desired location and limit the flow to the plant material.
The Water Resources Department estimates the annual cost savings for a single family residential customer between $40 and $65. This assumes that a resident would retrofit the irrigation system with rotor sprinkler heads. The water savings are estimated at 14,000 to 20,000 gallons a year.

The turf removal rebate program pays $1.00 per square foot of turf removed and replaced with drought tolerant plants, water conserving irrigation and a water permeable ground cover such as rock, bark or pavers. The project must be a minimum of 40 square feet and up to 80 square feet is eligible for the rebate. Unlike the device rebate, the turf removal program requires the submittal of a pre-application and a landscape plan for the proposed project. Once approval is received the resident has 60 days to complete the project. The water customer must commit to keeping the area turf free for five years to receive the rebate. Residents can link this rebate program with the device rebate offerings for a maximum rebate amount of $195.00. All rebates are awarded as a credit on the water bill.

Since these programs are new, Lakewood has no data on the effectiveness of the rebates. The Lakewood Department of Water Resources set up an inspection routine and a database to track the rebates and water use for the participating customers.

Metering with Commodity Rates for All New Connections & Retrofit Existing Connections

All existing and new Lakewood service connections are metered. In 2002 the City completed a five-year meter replacement program to insure accuracy in billing of consumption. The next meter rotation program will not be implemented until 2018.The department maintains funds in the annual operating budget to test large meters and maintains a meter test bench to test smaller meters, 2-inch or less. The meters listed in Table 5-2 include replacement meters due to loss of accuracy, and meter and service upgrades. New and changed out meters are tracked in the City's utility billing system, serial number, size, manufacturer and date of installation.

Meters are read and customers billed bi-monthly. Each user is charged a basic charge for service and a quantitative charge for water used. Attachment 10, Water Conservation Rate Structure, outlines the rate structure for Lakewood water customers. Residential users receive seven units of water with the basic charge of service; multifamily and commercial customers do not. Each customer category (restaurant, large commercial, fast food, schools, etc.) is assigned a range that is considered average consumption for that customer class. Customers that consume beyond that average range are charged penalties during a declared drought. (The City Council maintains the water rate resolution

in a Voluntary Drought Stage.) For example, a residential customer consuming over 108 units in the voluntary drought phase is charged 1.25 times the normal quantitative rate.

Metering with Commodity Rates

	FY2007	*FY2008*	*FY2009*	*FY2010*
# Unmetered Connections	0	0	0	0
# Replacement Meters Installed	47	60	82	48
# of Accounts without Commodity Rates	0	0	0	0
Expenditures	~$5,450	$16,236	$13,271	$9,755
Water Savings	Not Calculated			

Large Landscape Water Audits and Incentives

The largest landscape areas in the community are city-owned. Eight of these sites use recycled water for landscape irrigation. The Recreation and Community Services staff continually monitors the landscape irrigation at all City facilities. In April 2009 the City worked with a contractor from Metropolitan Water District of Southern California to analyze the irrigation at city facilities. See Attachment 13 for the landscape audit results from Water Wise Consulting, Inc.

The City Council adopted the Water Conservation in Landscaping Ordinance No. 93-11 in 1993 and amended it in 2009. See Attachments 14 and 15. The ordinance established standards and procedures for the design, installation, and management of water conserving landscapes in order to utilize available plant, water, and land resources to avoid excessive landscape water demands while ensuring high quality landscape design. These requirements are applicable to new and rehabilitated landscaping for industrial, commercial, office and institutional developments; parks and other public recreational areas; multifamily residential developments; public open space; and road medians and corridors.

The Department of Water Resources requires a separate metered connection for landscape irrigation for these projects. The utility has 221 dedicated irrigation connections to the potable water system. In September 2009 the Lakewood City Council approved the addition of three water conservation categories for landscape irrigation to the rate structure. The new categories placed irrigation metered connections into low, medium or large landscape irrigation customers based on the irrigated area. This change was incorporated into the utility billing system during the fall of 2010. The City expects that this will increase the department's ability to track this type of water use.

Single family residential developments under 7,000 square feet, and sites using recycled wastewater are exempt from the provisions of the Water Conservation in Landscaping Ordinance.

Since Fiscal Year 2005, the development of 29 projects in Lakewood's service area met the provisions in the Water Conservation in Landscaping Ordinance. These developers submitted appropriate data to the Community Development Department for approval.

The developer submits plans to the Lakewood's Community Development Department for

review and initial approval. Once the plan is approved the developer installs the irrigation and landscaping. Upon installation, Community Development staff inspects the project to verify the installation of the approved irrigation devices and plantings. The table below indicates the number of submittals required as per the provisions of the Landscape Ordinance from 2001-2010.

Large Landscape Conservation Programs

	2005	***2006***	***2007***	***2008***	***2009***	***2010***
# of Budgets Developed	9	6	4	2	5	3
# of Surveys Completed	3	8	4	3	1	7
# of Follow Up Visits	0	5	6	4	4	1
Actual Expenditures	Data Not Collected					
Actual Water Savings	Data Not Collected					

High Efficiency Washing Machine Rebate Programs

The City of Lakewood does not operate a high efficiency washing machine rebate program. Central Basin Municipal Water District provides this rebate program for the community. The resident fills out a rebate application and provides proof of residency and purchase, then mails the information to a contract agency for processing. The table, entitled High Efficiency Clothes Washer Rebate Programs, indicates the number of rebates processed from Fiscal Year 2006 through Fiscal Year 2010. Total annual savings for the 841 high efficiency washing machines in use is estimated at 1,255,110 gallons per year.

High Efficiency Clothes Washer Rebate Programs

	2006	***2007***	***2008***	***2009***	***2010***
$ per Rebate Start at:	$85	$85	$85	$85	$85
# of Rebates	67	102	170	75	427
Expenditures	Lakewood Has No Direct Expenditure for Program				
Water Savings (gallons)	99,991	152,225	253,708	111,930	637,256

Public Information Programs

The Public Information Program demand management measure requires water purveyors educate the public about water conservation through speaking to community groups and the media, advertising, billing inserts, consumer's water use comparison to previous year(s) on a local and regional level.

The City of Lakewood continues to spread the word about water conservation through periodic articles in various publications, marketing tools and speaking engagements. The table that follows indicates the budget and the type of public awareness programs used in Lakewood's service area.

Public Information Programs

	FY2006	FY2007	FY2008	FY2009	FY2010
Paid Advertising					✓
Public Service Announcement					
Bill Inserts/ Newsletter/ Brochures	✓	✓	✓	✓	✓
Demonstration Gardens	✓				
Special Events, Media Events	✓	✓	✓	✓	✓
Speaker's Bureau	✓	✓	✓	✓	✓
Coordination with Other Agencies, Industry, Groups					
Expenditures	~$16,500	~$16,500	$23,268	$17,622	$20,056

Public Information Events

Staff participates in large community events to promote water conservation. The City of Lakewood hosts an annual event called the Pan Am Fiesta. The utility staffs a booth to distribute water conservation and water quality information to customers. The same booth hosts other departments with information on emergency preparedness and recycling. Approximately 300 individuals receive conservation information through the fiesta each year.

In July 2010 the City updated the water conservation street banners along major boulevards containing the conservation message. Approximately 287 banners are installed at various times during the year to reinforce the conservation message.

In 2003 the City dedicated a 17-acre nature trail called the West San Gabriel River Open Space. This trail contains California native plantings. The Phase 2 project, which expanded the West San Gabriel River Open Space area an additional 2.5 acres, was completed in 2007.

Every spring the utility participates in two events: City of Lakewood's Earth Walk and the Water Replenishment District of Southern California's Groundwater Festival. The Earth Walk encourages children and their parents to learn about the environment through interactive displays. The Lakewood Department of Water Resources puts the participants through their paces by testing their knowledge about water conservation. The department's display also provides information to parents regarding the earth friendly advances implemented by the City, including the use of recycled water and solar energy to operate production facilities. Approximately 200 children and parents received water conservation, waste recycling and gardening information from local and regional agencies. The WRD Groundwater Festival, held in

Lakewood, focuses on water conservation and protection of the groundwater table. The Lakewood Department of Resources staff provides water conservation materials specific to Lakewood at this event.

Publications

The City uses numerous printed materials to send information to the community. *Lakewood Living*, the community newsletter, incorporates water quality, conservation and infrastructure improvement information in its Annual Water Quality Report each spring. This publication is delivered to every address in the utility's service area, over 20,000 households and businesses. See Attachment 12. *Lakewood Briefs*, the City's water utility bill stuffer highlighted water conservation in four issues (Attachment 16). In addition to routine mailings, the City communicated the water conservation message to the community through one direct mailing (Attachment 17).

The City developed a water waste door hanger as a means to educate customers and to respond to neighbors witnessing water waste. Water customer service staff and Lakewood code enforcement officers use these tags as a first contact for water wasting customers. See Attachment 18. The City has also developed a water conservation brochure specific to Lakewood water customers, which is distributed to the community at various events. See Attachment 19.

School Education Programs

The City works with the four school districts and one private school to deliver information on water conservation to school children. Staff provides tours of water facilities, all-school assemblies, a poster contest and classroom presentations. The table indicates the number of children reached during school education programs by the Lakewood Department of Water Resources, and the City of Lakewood expenses associated with the program. The department has developed several water conservation worksheets for school children.

School Education Programs

	2006	***2007***	***2008***	***2009***	***2010***
Grades K-3rd	645	585	700	616	1036
Grades 4th-6th	395	390	505	370	690
Grades 7th-8th	0	0	0	0	0
High School	0	0	0	0	0
Expenditures	$1,100	$1,200	$1,330	$1,289	$1,064

Since 1990 over 17,750 children have participated in the annual water conservation poster contest sponsored by the City. This is the only water-related program that the City offers to the entire community. The program coordinates with Earth Day activities and ends during Water Awareness Month in May. The City provides each class with poster paper and a water conservation related giveaway. The 12 winning posters in three age categories are displayed at the annual Pan Am Fiesta (see above). The utility staff urges teachers to use the water department as a resource. Between 2006 and 2010 staff made

four presentations to 480 Lakewood students. The students received information on water supply and simple water conservation tips.

Commercial and Industrial Water Conservation

During periods of declared drought, the City water conservation ordinance requires all commercial and industrial water customers to submit a water conservation plan. The plan requires a thorough examination of water use. Approximately 91 plans have been submitted and approved by the Department of Water Resources since 1991. Attachment 20 is the Business Water Conservation Plan.

Department of Water Resources staff provides technical assistance for the completion of the plan. The construction of new development is limited in Lakewood, due to the availability of vacant or underutilized land in the service area, but the department staff review and approve all plans that require new plumbing installation or retrofit of existing plumbing fixtures. The City also requires developments over 10,000 square feet to install a separate meter for irrigation for possible future connection to the recycle water distribution system. The City maintains only one financial incentive program to encourage water conservation, that is the lower quantitative rate charged to customers purchasing recycled water. The recycled water customer saves $1.15 per unit consumed and is exempt from the water conservation rate structure.

The Central Basin Municipal Water District (CBMWD) conducts two programs that target commercial and industrial water users; installation of water free urinals and high efficiency clothes washers. CBMWD worked various business to install 10 waterless urinals; an estimated 54,071 gallons of water savings annually. The 7 commercial water efficient clothes washers provide an estimated savings of 10,447 gallons of water annually.

Commercial High Efficiency Clothes Washer Program

	2006	***2007***	***2008***	***2009***	***2010***
# of Commercial Replacements		2	8		
# Industrial Replacements					
# Institutional Replacements					
Expenditures		Lakewood Has No Direct Expenditure for Program			
Water Savings (AF)		2,985	7,462		

Urinal Replacement Program

	2006	***2007***	***2008***	***2009***	***2010***
# of Commercial Replacements			2	8	
# Industrial Replacements					
# Institutional Replacements					
Expenditures		Lakewood Has No Direct Expenditure for Program			
Water Savings (AF)			10,814	43,257	

Wholesale Agency Programs

The City of Lakewood does not wholesale water to other agencies, therefore provides no water conservation programs.

Conservation Pricing

According to the Memorandum of Understanding Regarding Urban Water Conservation in California, "conservation pricing provides economic incentives (a price signal) to customers to use water efficiently."[11] This requires a metered service connection to determine volume of water used by a water customer.

The section entitled Water Shortage Contingency Plan details the City's water conservation rate structure, which was adopted by the Lakewood City Council in 1991 and revised in 2009. The utility's rate structure is based on the historical water use by customer classification or an allocation-based rate. See Attachment 10 to examine rate structure for all Lakewood water customers. The structure is based on the premise the more you use the more you pay.

The table below lists the water use categories included in Lakewood's water conservation rate structure. The highlighted uses were added in 2009.

Lakewood's Water Use Classifications

Water Use Classification	Description of Account Type
Single Family Residential	Detached homes without differentiating lot size
Multiple Family Residential	Based on the number of units connected to the water meter
Duplex Residential	Two residential units
Auto Related Business	Gas stations & auto repair shops
Churches	Churches without school facilities
Supermarkets	Large food store chains
Theaters	Multiple movie theater centers
Car Washes	Car washes without recycling equipment
Fast Food Restaurants	Large volume fast food establishments
Fast Food Restaurants	Small volume fast food establishments
Small Food Stores	Grocery stores not associated with a supermarket chain
Medical/Dental Offices	Professional medical facilities excluding hospitals
Commercial Nurseries & Growers	Christmas tree farms & local growers
Restaurants, Lounges & Taverns	All non-fast food establishments
Schools	Elementary schools
Schools	Junior & senior high schools
Commercial Storefront	Small commercial business
Commercial Centers	Small commercial shopping centers
Commercial Large	Large commercial shopping centers
Motels	Based on the number of units connected to the water meter
Coin Operated Laundry	Laundry facilities
Hair and Nail Salon	Hair, nail and facial salons
Department Stores	Large retail department stores
Ice Rinks	Ice rinks
Landscape Irrigation Small Area	Typical water use below 11 hcf per month
Landscape Irrigation Medium Area	Typical water use below 81 hcf per month
Landscape Irrigation Large Agra	Typical water use below 441 hcf per month
Exempt	Hospitals, recycled water user, recycled car washes

The City does not provide sewer service. The County of Los Angeles provides this service

[11] Memorandum of Understanding Regarding Urban Water Conservation in California, Amended September 16, 2009, Exhibit 1, 29.

to the community.

Water Conservation Coordinator

The member of the Department of Water Resources staff fills the function of the water conservation coordinator. The Water Administration Manager spends approximately five percent of the time managing the provisions in the water conservation program, and implementing the public relations and school education programs. This staff member also coordinated the development of the water conservation rebate program. The time required implementing the rebate program once applications are submitted, beginning May 1, 2011, is unknown at this time.

During periods of declared drought the time allocated to conservation duties increases to approximately 50 percent. The duties related to conservation coordination were developed in 1991. The individual that currently holds the position was involved in the development of the utility's water conservation program.

Water Waste Provisions

The City Council adopted general water use prohibitions in 1991 and updated in 2009. Some of these provisions are in effect regardless of water supply conditions. See Attachment 8 for the Water Conservation Ordinance. The table indicates the type of water waste provisions contained in the City's water conservation ordinance.

Water Waste Provisions

	2006	***2007***	***2008***	***2008***	***2009***
Waste Ordinance in Effect	YES	YES	YES	YES	YES
# of On-Site Visits	0	0	0	0	0
Water Softener Ordinance	NO	NO	NO	NO	NO
Expenditures	No Additional Expense to Administer the Water Waste Provisions				

The Water Conservation Ordinance established guidelines for each phase of a water supply shortage. The following are water waste practices that are always prohibited:

- Use of potable water for irrigation by commercial shopping centers, schools, office buildings, hospitals, industrial uses, and churches whose property line is located within a reasonable distance from the City of Lakewood's recycled water system;
- Use of decorative fountains, or other structures using water for aesthetic purposes operating without a recirculating system; and
- Failure to fix known leaks on indoor or outdoor plumbing fixtures. A leak is defined as any water not used for beneficial use that wastes more than 0.5 gallons of water per minute. All know leaks from indoor and outdoor plumbing fixtures shall be repaired within seven days upon receipt of written notice of the observed water leak.
- Drinking water shall not be served in any restaurant, motel, café or other drinking or eating establishment unless expressly requested.
- Installation of single pass cooling systems shall be prohibited in buildings requesting new water service.
- Hotels, motels and other commercial lodging establishments must provide customers the option to refuse daily towel and linen service. Commercial lodging establishments shall prominently display notice of this option in each guest room.

- Installation of non re-circulating car washes and laundry systems shall be prohibited.
- New eating and drinking establishments and existing eating and drinking establishments that remodel more than 50 percent of the kitchen area shall install water conserving dish wash spray valves.

The following are suggested water use practices during periods of normal water supply availability:

- Use of water to wash walkways, driveways, parking areas and other hard surfaces should occur only as necessary to alleviate safety and sanitary hazards, and then only with a hose equipped with a positive shut off nozzle, a handheld bucket or similar container, or a low volume/high pressure water broom. Excessive water runoff into gutters is discouraged.
- Washing of vehicles and any other mobile equipment should be done only with a bucket or a hose equipped with a positive shut off nozzle for quick rinses. Commercial car washes are exempt from this provision.
- Voluntary water conservation water audits are encouraged;
- Retrofit of water conserving devices, including but not limited to ultra low flow toilets and low flow showerheads, is encouraged; and
- Installation of water efficient landscapes and irrigation devices, such as drip irrigation and moisture sensors, is encouraged. A drip irrigation system shall be defined as an irrigation system consisting of individual emitters installed at permanent plantings with a capacity to emit no more than 2 gallons of water per hour of operation.

The following are suggested water use practices during periods of voluntary water conservation:

- Leaks from indoor and outdoor plumbing fixtures shall be repaired within six days upon receipt of written notice of observed water leak.
- Washing of sidewalks, driveways, parking lots, building exteriors, streets and gutters should be minimized and limited to no more than two times during a month to alleviate safety and sanitary hazards, and then only with a hose equipped with a positive shut off nozzle, a handheld bucket or similar container, or a low volume/high pressure water broom.
- Watering lawns and landscaped areas should be limited to between the hours of 5:00 p.m. and 9:00 a.m. Watering using a handheld bucket or similar container, a hose equipped with a shut off nozzle, a drip irrigation system with emitters producing no more than two gallons per hour, weather based controllers or stream rotor sprinklers meeting a 70 percent efficiency standard, or running an irrigation system for short durations to make repairs or adjustments are exempt from this provision.

The following are mandatory water use practices during periods of Phase 1 water supply shortages:

- Washing of sidewalks, driveways, parking lots, building exteriors, streets and gutters shall be limited to no more than two times during a month to alleviate safety and sanitary hazards, and then only with a hose equipped with a positive shut off nozzle, a handheld bucket or similar container, or a low volume/high pressure water broom. Water used in this manner to protect the public health is exempt from this provision.
- Washing of vehicles and any other mobile equipment shall be done only with a bucket or a hose equipped with a positive shut off nozzle for quick rinses. Commercial car washes are exempt from this provision.
- Leaks from indoor and outdoor plumbing fixtures shall be repaired within five days upon receipt of written notice of observed water leak.
- Sprinklers must be adjusted to minimize water runoff from landscape on to hardscape areas. No person shall allow excess water runoff after notice from the City to desist therefrom. Excess water runoff is defined as water accumulation in the street, gutters, neighboring properties or in other amounts sufficient to cause a flow of water off of landscape areas.

- Landscape irrigation is recommended during the early morning hours for no more than 10 minutes at a time. Irrigation should be avoided between the hours of 9:00 a.m. and 5:00 p.m. Landscape irrigation for commercial nurseries and growers, active parks and playing fields, school grounds, golf course greens, landscaping for fire and erosion protection, protecting endangered species, environmental mitigation projects, and properties using reclaimed water shall be exempt from this provision. Watering using a handheld bucket or similar container, a hose equipped with a shut off nozzle, a drip irrigation system with emitters producing no more than two gallons per hour, weather based controllers or stream rotor sprinklers meeting a 70 percent efficiency standard, or running an irrigation system for short durations to make repairs or adjustments are exempt from this provision.

The following are additional mandatory water use practices during periods of Phase 2 water supply shortages:

- Residential landscape irrigation can occur no more than three times during a seven day period for no more than ten minutes at a time during the months of June, July, August and September, and prohibited during the hours of 9:00 a.m. and 5:00 p.m. Landscape irrigation shall be restricted to twice during a seven day period for no more than ten minutes at a time during the months of October, November, December, January, February, March, April and May, and prohibited during the hours of 9:00 a.m. and 5:00 p.m. Irrigation should be avoided between the hours of 9:00 a.m. and 5:00 p.m. Landscape irrigation for commercial nurseries and growers, active parks and playing fields, school grounds, golf course greens, landscaping for fire and erosion protection, protecting endangered species, environmental mitigation projects, and properties using reclaimed water shall be exempt from this provision. Watering using a handheld bucket or similar container, a hose equipped with a shut off nozzle, a drip irrigation system with emitters producing no more than two gallons per hour, weather based controllers or stream rotor sprinklers meeting a 70 percent efficiency standard, or running an irrigation system for short durations to make repairs or adjustments are exempt from this provision.
- Non-residential water customers with consumption in excess of 25,000 cubic feet in any billing period during the prior year, shall prepare a written water conservation plan within 60 days of the effective date of a declared water shortage. The customer shall submit said plan to the Director of Water Resources for approval. The customer shall then implement the approved plan to meet the specific conservation goals stated therein.
- Leaks from indoor and outdoor plumbing fixtures shall be repaired within four days upon receipt of written notice of observed water leak.

The following are additional mandatory water use practices during periods of Phase 3 water supply shortage:

- Residential and commercial landscape areas shall be watered no more than two times during a seven day period for no more than ten minutes at a time during the months of June, July, August and September, and prohibited during the hours of 9:00 a.m. and 5:00 p.m. Landscape irrigation shall be restricted to once during a seven day period for no more than ten minutes at a time during the months of October, November, December, January, February, March, April and May, and prohibited during the hours of 9:00 a.m. and 5:00 p.m. Irrigation should be avoided between the hours of 9:00 a.m. and 5:00 p.m. Watering using a handheld bucket or similar container, a hose equipped with a shut off nozzle, a drip irrigation system with emitters producing no more than two gallons per hour, weather based controllers or stream rotor sprinklers meeting a 70 percent efficiency standard, or running an irrigation system for short durations to make repairs or adjustments are exempt from this provision.
- Irrigation of commercial nurseries and growers, active parks and playing fields, school grounds, golf course greens, landscaping for fire and erosion protection, protecting endangered species, environmental mitigation projects, shall be restricted to no more than three times during a seven day period for no more than ten minutes at a time. Irrigation shall be prohibited during the hours of 9:00 a.m. and 4:00 p.m. Watering using a handheld bucket or similar container, a hose equipped with a shut off nozzle, a drip irrigation system with emitters producing no more than two gallons per hour, weather based controllers or stream rotor sprinklers meeting a 70 percent efficiency standard, or running an

irrigation system for short durations to make repairs or adjustments are exempt from this provision. Those properties using reclaimed water are exempt from this provision.

- Leaks from indoor and outdoor plumbing fixtures shall be repaired within three days upon receipt of written notice of observed water leak.

The following are additional mandatory water use practices during periods of Phase 4 water supply shortages:

- Residential and commercial landscape areas shall be watered no more than one time during a seven day period for no more than ten minutes at a time during the months of June, July, August and September, and prohibited during the hours of 9:00 a.m. and 5:00 p.m. Landscape irrigation shall be restricted to once during a fourteen day period for no more than ten minutes at a time during the months of October, November, December, January, February, March, April and May, and prohibited during the hours of 9:00 a.m. and 5:00 p.m. Irrigation should be avoided between the hours of 9:00 a.m. and 5:00 p.m. Watering using a handheld bucket or similar container, a hose equipped with a shut off nozzle, a drip irrigation system with emitters producing no more than two gallons per hour, weather based controllers or stream rotor sprinklers meeting a 70 percent efficiency standard, or running an irrigation system for short durations to make repairs or adjustments are exempt from this provision.
- Irrigation of commercial nurseries and growers, active parks and playing fields, school grounds, golf course greens, landscaping for fire and erosion protection, protecting endangered species, environmental mitigation projects, shall be restricted to no more than two times during a seven day period for no more than ten minutes at a time. Irrigation shall be prohibited during the hours of 9:00 a.m. and 4:00 p.m. Watering using a handheld bucket or similar container, a hose equipped with a shut off nozzle, a drip irrigation system with emitters producing no more than two gallons per hour, weather based controllers or stream rotor sprinklers meeting a 70 percent efficiency standard, or running an irrigation system for short durations to make repairs or adjustments are exempt from this provision. Those properties using reclaimed water are exempt from this provision.
- Leaks from indoor and outdoor plumbing fixtures shall be repaired within two days upon receipt of written notice of observed water leak.

The following are additional mandatory water use practices during periods of Phase 5 water supply shortage:

- Residential and commercial landscaping shall be restricted to watering only permanent trees and shrubs with a hand carried bucket or similar container, or drip irrigation system with emitters producing no more than two gallons per hour one time during a seven day period during the months of June, July, August and September, and prohibited during the hours of 8:00 a.m. and 8:00 p.m. Landscape irrigation shall be restricted to watering only permanent trees and shrubs with a hand carried bucket or drip irrigation system with emitters producing no more than two gallons per hour one time during a fourteen day period during the months of October, November, December, January, February, March, April and May, and prohibited during the hours of 9:00 a.m. and 5:00 p.m.
- Irrigation of commercial nurseries and growers shall be restricted to one time during a seven day period and prohibited during the hours of 9:00 a.m. and 6:00 p.m. Watering using a handheld bucket or similar container, a hose equipped with a shut off nozzle, a drip irrigation system with emitters producing no more than two gallons per hour, weather based controllers or stream rotor sprinklers meeting a 70 percent efficiency standard, or running an irrigation system for short durations to make repairs or adjustments are exempt from this provision. Those properties using reclaimed water are exempt from this provision.
- Irrigation of active parks and playing fields, school grounds, golf course greens, landscaping for fire and erosion protection, protecting endangered species, environmental mitigation projects, shall be restricted to no more than twice during a seven day period for no more than ten minutes at a time. Irrigation shall be prohibited during the hours of 9:00 a.m. and 4:00 p.m. Watering using a handheld bucket or similar container, a hose equipped with a shut off nozzle, a drip irrigation system with emitters producing no more than two gallons per hour, weather based controllers or stream rotor sprinklers meeting a 70

percent efficiency standard, or running an irrigation system for short durations to make repairs or adjustments are exempt from this provision. Those properties using reclaimed water are exempt from this provision.

- Leaks from indoor and outdoor plumbing fixtures shall be repaired within 24 hours upon receipt of written notice of observed water leak.

Failure to meet the water use restrictions can result in a fine and/or the turn off of water service to the property. The City allows a water customer to file a petition, which waves the water use restrictions. The customer completes the Request for Exemption from Water Use Restrictions form (Attachment 9); the Department of Water Resources staff reviews the information and renders a decision. The customer can appeal the staff's decision to the City Council.

The City developed a water waste door hanger as a means to educate customers and to respond to neighbors witnessing water waste. Water customer service staff and Lakewood code enforcement officers use these tags as a first contact for water wasting customers. See Attachment 18.

Residential Toilet Replacement Program

The City does not operate a toilet replacement program. The Central Basin Municipal Water District (CBMWD) discontinued the high efficiency toilet rebate program on June 1, 2010. Prior to the end of the program Lakewood water customers who wanted to participate would purchase and install a low water use toilet, complete an application provided by CBMWD, and send the application, proof of purchase, and proof of residency (copy of most recent water bill) to CBMWD. Lakewood residents also participated in CBMWD sponsored toilet exchange programs during Fiscal Year 2006, 2007 and 2009. Residents, armed with the latest water bill, received a high efficiency toilet and water conserving showerhead. Several weeks later the resident returned to the drop off the used toilet.

CBMWD has distributed 364 toilets to Lakewood residents through a toilet exchange program and distributed 306 toilet rebates since 2005. See the tables below for information on the residential toilet replacement program. The annualized water savings totals 20 acre feet.

Single Family Residential High Efficiency Toilet Replacement Program

	2006	***2007***	***2008***	***2009***	***2010***
# Rebates	11	80	6	2	40
# Direct Installs					
# CBO Installs	294	47		23	
Expenditures	Program Paid For By CBMWD				
Water Savings AF	9.15	3.81	.18	.75	1.2

Multifamily Residential ULF Toilet Replacement Program

	2006	2007	2008	2009	2010
# Rebates				167	
# Direct Installs					
# CBO Installs					
Expenditures	Program Paid For By CBMWD				
Water Savings AF				5	

Demand Management Measures Not Implemented

The utility has not and does not plan to implement one of the Demand Management Measures: system water audits, leak detection and repair.

Demand Management Measures Not Implemented

Non-implemented & Not Scheduled DMM/Planned Water Supply Project Name	*Per Acre Foot Cost ($)*
System Water Audits, Leak Detection and Repair	$719

System Water Audits, Leak Detection and Repair

According to the California Urban Water Conservation Council, water system audits quantify water production and water sales, testing water meters, and field checking the distribution system.

The City does not contract for a distribution leak audit, due to the low volume of water lost through the system. A comparison of metered water sales, production, authorized non-metered uses (i.e. street sweeping, water used for storm drain clearing, annual mainline flushing and test pumping production facilities prior to meter installation) and metered water production indicates Lakewood had an unaccounted water loss of 90 acre feet in FY2010 or 1 percent of the total water produced. The cost of an audit is approximately $97,000. Assuming that a leak detection audit saves 50 percent of the unaccounted for water in the distribution system, 45 acre feet of unaccounted water would be saved annually.

Groundwater extraction fees for the Fiscal Year 2010 was $185.85 an acre foot. The energy cost for groundwater production was $51.82 per acre foot; totaling $238 per acre foot. The cost of implementing the program is estimated at $719 an acre foot, which indicates the program, is not cost effective to implement.

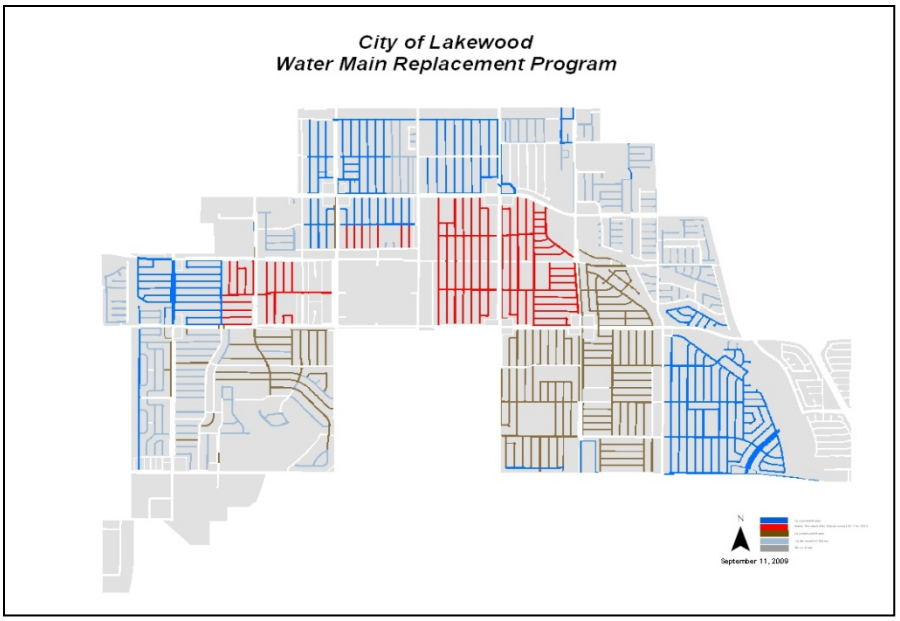
Cost/Benefit System Water Audits, Leak Detection & Repair

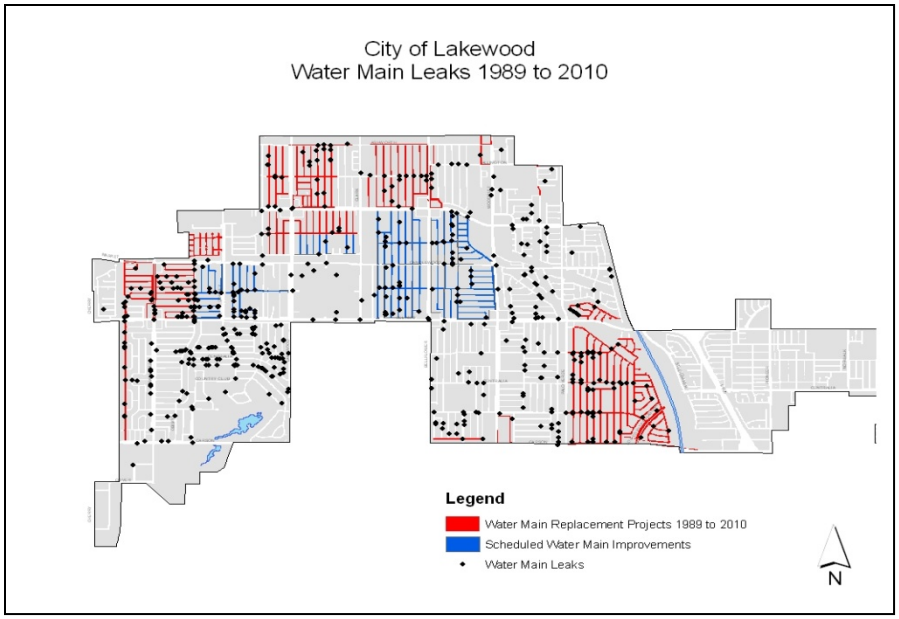
Total Costs	$97,000
Total Benefits	$32,130
Time Horizon	3 Years
Cost of Water ($ per AF)	$238
Water Savings (AF/Y)	45

The Department of Water Resources does implement procedures to minimize water loss caused by consumer leaks. See Section on Water Survey Programs for Single-Family

and Multifamily Residential Customers for additional information.

In addition to providing assistance with consumer leak detection, the City has chosen to focus funds for the improvement of water mains. The location of water main breaks and water quality complaints are maintained and located on a GIS based map to determine which areas of the water system are most vulnerable to breaks. These areas are targeted for replacement. In 1990 the City maintained almost 80 miles of 4-inch undersized cast iron and steel water mains. In the last 20 years 37 miles of mains have been replaced.





SECTION 7: Completed Urban Water Management Plan Checklist

Urban Water Management Plan Checklist, Organized by Subject

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
PLAN PREPARATION				
4	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)		Section 1 p. 1
6	Notify, at least 60 days prior to the public hearing on the plan required by Section 10642, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Any city or county receiving the notice may be consulted and provide comments.	10621(b)		Section 1, p. 1-2
7	Provide supporting documentation that the UWMP or any amendments to, or changes in, have been adopted as described in Section 10640 et seq.	10621(c)		Resolution 2011-23 following title page
54	Provide supporting documentation that the urban water management plan has been or will be provided to any city or county within which it provides water, no later than 60 days after the submission of this urban water management plan.	10635(b)		Section 1, p. 2
55	Provide supporting documentation that the water supplier has encouraged 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		Section 1, p. 1-2
56	Provide supporting documentation that the urban water supplier made the plan available for public inspection and held a public hearing about the plan. For public agencies, the hearing notice is to be provided pursuant to Section 6066 of the Government Code. The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. Privately-owned water suppliers shall provide an equivalent notice within its service area.	10642		Attachment 21

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
57	Provide supporting documentation that the plan has been adopted as prepared or modified.	10642		Resolution 2011-23 following title page
58	Provide supporting documentation as to how the water supplier plans to implement its plan.	10643		Section 1, p. 2
59	Provide supporting documentation that, in addition to submittal to DWR, the urban water supplier has submitted this UWMP to 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. This also includes amendments or changes.	10644(a)		Section 1, p. 2, Attachment 21
60	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the urban water supplier has or will make the plan available for public review during normal business hours	10645		Section1, p. 2
SYSTEM DESCRIPTION				
8	Describe the water supplier service area.	10631(a)		Section 2, p. 3
9	Describe the climate and other demographic factors of the service area of the supplier	10631(a)		Section 2, p. 3-6
10	Indicate the current population of the service area	10631(a)	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M.	Section 2, p. 6-7
11	Provide population projections for 2015, 2020, 2025, and 2030, based on data from State, regional, or local service area population projections.	10631(a)	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Section 2, p. 7
12	Describe other demographic factors affecting the supplier's water management planning.	10631(a)		Section 2, p. 3-6
SYSTEM DEMANDS				
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 basis for determining those estimates, including references to supporting data.	10608.20(e)		Section 3, p. 9-17, Attachment 1

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
2	*Wholesalers:* Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. *Retailers:* Conduct at least one public hearing that includes general discussion of the urban retail water supplier's implementation plan for complying with the Water Conservation Bill of 2009.	10608.36 10608.26(a)	Retailers and wholesalers have slightly different requirements	Section 1, p. 2, Section3, p. 17-18
3	Report progress in meeting urban water use targets using the standardized form.	10608.40		Does Not Apply to 2010 UWMP
25	Quantify past, current, and projected water use, identifying the uses among water use sectors, for the following: (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, conjunctive use, and (I) agriculture.	10631(e)(1)	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.	Section 3, p. 9-14
33	Provide documentation that either the retail agency provided the wholesale agency with water use projections for at least 20 years, if the UWMP agency is a retail agency, OR, if a wholesale agency, it provided its urban retail customers with future planned and existing water source available to it from the wholesale agency during the required water-year types	10631(k)	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	Section 3, p. 18 Do not purchase potable water from wholesale agency
34	Include projected water use for single-family and multifamily residential housing needed for lower income households, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)		Section 3. p. 11-12
SYSTEM SUPPLIES				
13	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, and 2030.	10631(b)	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided.	Section 4, p. 19-30

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
14	Indicate whether groundwater is an existing or planned source of water available to the supplier. If yes, then complete 15 through 21 of the UWMP Checklist. If no, then indicate "not applicable" in lines 15 through 21 under the UWMP location column.	10631(b)	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	Yes Section 4, p. 19-24
15	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)		Adjudicated Basin Managed by Water Replenishment District of Southern California Section 4, p. 20-24
16	Describe the groundwater basin.	10631(b)(2)		Section 4, p. 20-21
17	Indicate whether the groundwater basin is adjudicated. Include a copy of the court order or decree.	10631(b)(2)		Groundwater Basin Adjudicated Attachment 4
18	Describe the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. If the basin is not adjudicated, indicate "not applicable" in the UWMP location column.	10631(b)(2)		Section 4, p. 23-24
19	For groundwater basins that are not adjudicated, provide information as to whether DWR 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. If the basin is adjudicated, indicate "not applicable" in the UWMP location column.	10631(b)(2)		Not Applicable
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	10631(b)(3)		Section 4, p. 23-24

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
21	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	10631(b)(4)	Provide projections for 2015, 2020, 2025, and 2030.	Section 4, p. 24
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)		Section 4, p. 24-25
30	Include a detailed description of all water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years, excluding demand management programs addressed in (f)(1). Include specific projects, describe water supply impacts, and provide a timeline for each project.	10631(h)		Section 4, p. 30
31	Describe desalinated water project opportunities for long-term supply, including, but not limited to, ocean water, brackish water, and groundwater.	10631(i)		Section 4, p. 25
44	Provide information on recycled water and its potential for use as a water source in the service area of the urban water supplier. Coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	10633		Section 4, p. 25-30
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)		Section 4, p. 26-27
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)		Section 4, p. 26-27
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)		Section 4, p. 28-29
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)		Section 4, p. 29-30
49	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.	10633(e)		Section 4, p. 28

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
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)		Section 4, p. 28-29
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)		Section 4, p. 29-30, Attachment 5
WATER SHORTAGE RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING [b]				
5	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	10620(f)		Section 5, p. 31-32
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage and provide data for (A) an average water year, (B) a single dry water year, and (C) multiple dry water years.	10631(c)(1)		Section 5, p. 31-46
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)		Section 5, p. 32
35	Provide an urban water shortage contingency analysis that specifies stages of action, including up to a 50-percent water supply reduction, and an outline of specific water supply conditions at each stage.	10632(a)		Section 5, p. 32-34
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)		Section 5, p. 42-44
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)		Section 5, p. 32-34
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)		Section 5, p. 34-35

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
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)		Section 5, p. 35-38
40	Indicated penalties or charges for excessive use, where applicable.	10632(f)		Section 5, p. 37-38
41	Provide 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)		Section 5, p. 38-40
42	Provide a draft water shortage contingency resolution or ordinance.	10632(h)		Attachments 7, 8 & 10
43	Indicate a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)		Section 5, p. 41
52	Provide information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments, and the manner in which water quality affects water management strategies and supply reliability	10634	For years 2010, 2015, 2020, 2025, and 2030	Section 5, p. 41-42
53	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing 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. Base the assessment on the information compiled under Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)		Section 5, p. 42-46
DEMAND MANAGEMENT MEASURES				
26	Describe how each water demand management measures is being implemented or scheduled for implementation. Use the list provided.	10631(f)(1)	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	Section 6, p. 47-62

No.	UWMP requirement [a]	Calif. Water Code reference	Additional clarification	UWMP location
27	Describe the methods the supplier uses to evaluate the effectiveness of DMMs implemented or described in the UWMP.	10631(f)(3)		Section 6, p. 47-62
28	Provide 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 ability to further reduce demand.	10631(f)(4)		Section 6, p. 47-62
29	Evaluate each water demand management measure that is not currently being implemented or scheduled for implementation. The evaluation should include economic and non-economic factors, cost-benefit analysis, available funding, and the water suppliers' legal authority to implement the work.	10631(g)	See 10631(g) for additional wording.	Section 6, p. 61-62
32	Include the annual reports submitted to meet the Section 6.2 requirements, if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)	Signers of the MOU that submit the annual reports are deemed compliant with Items 28 and 29.	Not signatory of the MOU

a 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.

b The Subject classification is provided for clarification only. It is aligned with the organization presented in Part I of this guidebook. 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.

Attachments

Attachment 1: Calculation of 20 Percent per Capita Water Reduction Goal
- City of Lakewood Calculations:
  - Table 1 Urban Retail Water Supplier Gross Water Use Calculation
  - Table 2 Calculation of Annual Deductable Volume of Indirect Recycled Water Entering Distribution System
  - Table 3 Base Daily per Capita Water Use for Section 10608.22
  - Table 4 Base Daly per Capita Water Use Calculation for Section 10608.20
- Los Angeles Gateway Region Integrated Regional Management JPA Calculations:
  - Los Angeles Gateway Region Integrated Regional Management JPA Letter of Adoption of the Gateway Regional Water Conservation Alliance Report, June 15, 2011
  - Gateway Regional Water Conservation Alliance Report, Los Angeles Gateway Region Integrated Regional Water Management Authority, June 2011

Attachment 2: Water Conservation Rebate Program
- FAQs for Device Rebate Incentive Program
- Water Conservation Device Rebate Program Application
- Types of Rebates (Devices)
- FAQs Turf Removal Rebate Program
- Turf Project Types of Rebates
- Sample Turf Removal Pre-Application
- Sample Turf Removal Plan
- Sample of Turf Removal Rebate Check List
- Turf Removal “How to measure areas”

Attachment 3: Central Groundwater Basin Historical Groundwater Recharge
- Table: Historical Amounts of Water for Replenishment, Water Replenishment District of Southern California2010 Engineering Survey and Report, p. A-4

Attachment 4: Central Groundwater Basin Judgment
- Superior Court of the State of California for the County of Los Angeles, 786,656 Second Amended Judgment (Declaring and Establishing Water Rights in Central Basin and enjoying extractions therefrom in excess of specified quantities.)

Attachment 5: Recycled Water Feasibility Study
- City of Lakewood Feasibility Study for the Proposed Expansion of the Lakewood Recycled Water System in Los Angeles County, California July 15, 2010

Attachment 6: Lakewood Department of Water Resources Emergency Public Notification Plan

Attachment 7: Declaration of Water Supply Emergency Resolution
Resolution No. 91-12 A Resolution of the City Council of the City of Lakewood Declaring Phase 1 of the Lakewood Water Conservation Plan by Reason of a Water Supply Shortage

Attachment 8: Water Conservation Ordinance
Lakewood Municipal Code Section 7500Water Works System, Revised 2009

Attachment 9: City of Lakewood Department of Water Resources Request for Exemption from Water Use Restrictions

Attachment 10: Water Conservation Rate Structure
City of Lakewood Resolution No. 2009-6 A Resolution of the City Council of the City of Lakewood, Establishing Rules, Regulations and Charges Governing Water Conservation and Repealing Prior Action
Water Service Procedure Manual, City of Lakewood, CA

Attachment 11: City of Lakewood Department of Water Resources Residential Water Audit Checklist

Attachment 12: *Lakewood Living Annual Water Quality Report, March 2011, Volume 33, No. 2*

Attachment 13: Landscape Audit Results from Lakewood Parks
Water Wise Consulting Inc., City of Lakewood Facilities Details April 1, 2009

Attachment 14: Water Conservation in Landscaping Ordinance
Lakewood Municipal Code Section8600 Water Conservation in Landscaping Revised 2009

Attachment 15: Procedures for Water Conservation in Landscaping Ordinance
Resolution No. 2009-59 A Resolution of the City Council of the City of Lakewood, Establishing Rules, Regulations and Procedures Governing the Implementation of the Water Conservation in Landscaping Ordinance
City of Lakewood Water Conservation in Landscaping Rules, Regulations and Procedures

Attachment 16: Lakewood Briefs
Lakewood Briefs March 2009 “Is Your Home Water Tight?”
Lakewood Briefs May/June 2010 “Conserve Lakewood. It’s up to us”
Lakewood Briefs July/August 2010 “Saving H2O It’s up to us”

Lakewood Briefs September/October 2010 “It’s up to us!”

Attachment 17: Lakewood Water Conservation Mailing
Is Your Home Water Tight? April 2009
Attachment 18: Lakewood Water Waste Door Hanger
Is Your Home Water Tight? April 2009

Attachment 19: Lakewood Water Conservation Brochure
Lakewood Water. Ideas for wise water management. It’s up to us. April 2010

Attachment 20: City of Lakewood Water Conservation Business Plan

Attachment 21: Proof of Notification & Distribution of 2010 City of Lakewood Urban Water Management Plan Update
Agenda Regular City Council Meeting, May 24, 2011
Transmittal Letter for Draft 2010 City of Lakewood Urban Water Management Plan Update and Distribution List
City of Lakewood Notice of Availability
Other Advertisement of Public Hearing:
Lakewood Living April 2011