FINAL 2015
URBAN WATER MANAGEMENT PLAN

CITY OF LAKEWOOD

LAKEWOOD

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RESOLUTION NO. 2016-45

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LAKEWOOD ADOPTING THE CITY OF LAKEWOOD 2015 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 over 59,000 customers; and

WHEREAS, the 2015 Urban Water Management Plan Update must be adopted before July 1, 2016 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 2015 Urban Water Management Plan Update, was reviewed by the Water Resources Committee on April 18, 2016; 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 April 27, 2016;

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 2015 Urban Water Management Plan Update, has been submitted to a public review and a public hearing before the City Council.

SECTION 2. The 2015 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 28TH DAY OF JUNE, 2016.

Mayor

ATTEST:

City Clerk

Table of Contents

Appendix

Appendix 1
AWWA Water Audit Spreadsheet

Appendix 2
SB X7-7 Tables

Appendix 3
Required UWMP Tables

Attachments

Attachment 1
Sample Water Conservation Device and Turf Rebate Applications

Attachment 2
Regional Alliance Target/Report

Attachment 3
Central Basin Adjudication of 1966

Attachment 4
3rd Central Basin Adjudication Amendment

Attachment 5
LA County Sanitation District Facts and Figures

Attachment 6
Recycled Water System Expansion Feasibility Study

Attachment 7
Central Basin Historical Recharge

Attachment 8
Excerpt from the Lakewood Water Resources Departmental Emergency Operations Procedures Public Notification Plan

Attachment 9
Water Conservation Ordinance 91-3, 91-13 and 2009-5

Attachment 10
Water Use Restriction Form

Attachment 11
Resolution 2015-15 Extending Water Conservation Measures By Reason of Regulations Imposed by the State Of California

Attachment 12
Water Audit Checklist

Attachment 13
Landscape Audit, Water Wise Consulting, Inc.

Attachment 14
Sample Lakewood Briefs

Attachment 15
Sample Water Utility Bill Stuffer

Attachment 16
Sample Letter Conservation Letter

Attachment 17
Water Wasting Door tag

Attachment 18
Water Conservation Brochure

Attachment 19
Business Water Conservation Plan

Attachment 20
Water Use Exemption Restrictions Form

Attachment 21
City of Lakewood Water Conservation Business Plan

Attachment 22
Proof of Notification & Distribution of 2015 City of Lakewood Urban Water Management Plan Update

City of Lakewood
2015 Urban Water Management Plan
Contact Sheet

Plan Submittal Date:	June 30, 2016
Name of Person Submitting Plan:	Ron Piazza, Mayor
Phone Number:	562.866.9771 ext. 2700
Water Supplier Type:	Municipality
Water Sales Type:	Retailer
Lakewood Water System Number:	1910239
Utility services provided by water utility:	Potable & Recycled Water
Bureau of Reclamation Contractor:	No
State Water Project Contractor:	No
Preparer:	Toyasha S. Sebbag, Water Administration Manager Jason J. Wen, Ph.D., P.E. Director of Water Resources City of Lakewood 5050 Clark Ave. Lakewood, CA 90712 562.866.9771 ext. 2700 tsebbag@lakewoodcity.org

Chapter 1: Introduction and Overview

The 2015 Urban Water Management Plan (UWMP) Update serves as a planning tool for the city's water utility (which serves all of Lakewood west of the San Gabriel River). The plan examines the following elements:

- Projected changes in population and land use, which could increase water demand;
- Historical water use by water source (i.e., groundwater, import water and recycled water supplies) and water customer type;
- Future water supply and demand projections for the next 20 years based on the 2020 per capita per day water use targets required by state mandate to reduce per capita water use by 20 percent by the year 2020;
- Water conservation efforts including water audits, installation of water saving devices and public information programs; and
- Water shortage contingency plan, which includes the city's water use prohibitions and water conservation planning.

Lakewood draws all of its water from the Central Groundwater Basin, an "adjudicated basin" (which means that the pumpers are bound by a court-administered agreement that limits how much water each can draw annually from the basin). The city owns 9,432 acre-feet of groundwater extraction rights and pumped an average of 7,770 acre-feet from 2011 to 2015. Annual water use varies based on weather conditions and implementation of emergency conservation regulation. Since the 2010 UWMP, average water use decreased 14 percent as a result of water conservation regulation implementation started in summer 2014. However, historically more water is consumed during dry years than during years with average or above average rainfall.

The UWMP Act requires water utilities serving over 3,000 customers to prepare an Urban Water Management Plan. The City of Lakewood Water Department of Water Resources meets this requirement and regularly updates its UWMP every five years. This 2015 Plan serves to update the City of Lakewood's 2010 UWMP.

Chapter 2: Plan Preparation

2.1 Agency Coordination

The City's Department of Water Resources prepared the 2015 Urban Water Management Plan during April 2016. 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 2015 UWMP: Metropolitan Water District of Southern California (MWD), Central Basin Municipal Water District (CBMWD), City of Cerritos, Los Angeles County Sanitation District and Water Replenishment District of Southern California (WRD). See Table 2-1 for a summary of inter-agency and public involvement.

Table 2-1: 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 Draft Copy***	***Sent Notice of Intent to Adopt***
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					Draft UWMP 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	Draft UWMP online at www.lakewoodcity.org, City of Lakewood, Notice in *Lakewood Living Magazine, Lakewood Community News*

In a format acceptable to the California Water Code (CWC), Tables 2-1 to 2-4 below summarizes the City of Lakewood's water system information. This standardization of data tables allows for more efficient data management and easier compilation of data for regional and statewide planning.

Table 2-1A: Public Water Systems

Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015 (acre-feet)
1910239	City of Lakewood	20,339	6,174
	TOTAL	**20,339**	**6,174**

The City of Lakewood's 2015 Urban Water Management Plan (UMWP) Update was completed as an individual water retailer and can be used as a reference tool for surrounding water agencies. The City of Lakewood is one of 25 cities and three water

agencies part of the Gateway Water Management Authority (GWMA). The Los Angeles Gateway Region Integrated Regional Water Management "IRWM" Joint Powers Authority "JPA") also known as GWMA is a large watershed-based coalition. It is responsible for coordinating the regional watershed needs of 2 million people in the Gateway Region located in Southeastern Los Angeles County. Distinctive hydrogeological, topographic, demographic and political elements bring the GWMA together as a cohesive, interdependent, self-governing body. The agency works to apply for federal and state grants that enhance the water governance of the area.

Table 2-1B: Plan Identification

☑	Individual UWMP	
☐	Regional UWMP (RUWMP)	
	Select One:	
	☐	RUWMP includes a Regional Alliance
	☐	RUWMP does not include a Regional Alliance

The City of Lakewood is a retailer water agency whose UWMP calculations are in Calendar Years. Should a table differ in its calculation, for example the Water Year discussed in this UWMP is from October 1, 2014 to September 30, 2015, then that information is identified as a note in the table. Otherwise, all tables are in calendar year to remain consistent with the city's previous UWMPs.

Table 2-1C: Agency Identification

Type of Agency	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year	
☑	UWMP Tables Are in Calendar Years
☐	UWMP Tables Are in Fiscal Years
Units of Measure Used in UWMP	
Unit:	AF (acre-feet)

The City of Lakewood relies on groundwater pumped from the adjudicated Central Groundwater Basin. The pumping rights of the Basin are overseen and managed by the Central Basin Watermaster Water Rights Panel and Water Replenishment District (WRD) Details of this arrangement can be found in Chapter 6 of this 2015 UWMP Update.

Table 2-1D: Water Supplier Information Exchange

The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
Wholesale Water Supplier Name: N/A - The City of Lakewood relies on 100% groundwater and our Central Groundwater Basin adjudicated pumping rights.

2.2 Public Participation

The Department of Water Resources staff met with the City Council Water Resources Committee on April 18, 2016 to discuss the content of the plan and obtain feedback. The City Council Water Resources Committee directed staff to schedule a public hearing to gather testimony regarding the 2015 Urban Water Management Plan Update at the June 28, 2016 City Council meter and consider plan adoption. The department informed the general public in the following manners:

- Posted 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 the City's weekly eMagazine, *Lakewood Connect*, to approximately 20,000 residents and businesses after April 19, 2016.

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

2.3 Adoption, Submittal & Implementation

On April 26, 2016 the Lakewood City Council opened the public comment period for the UWMP. The Lakewood City Council held a public hearing and adopting Resolution No. 2016-45 approving the amended plan on June 28, 2016. 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 2015 Urban Water Management Plan:

Action	*Time Line*
Presentation of the UWMP to the City Council Water Resources Committee	April 18, 2016
City Council Opens Public Comment Period	April 26, 2016
Informed Outside Agencies Regarding the Preparation of the UWMP	April 27, 2016
UWMP Available for Public Comment in the City Clerk's Office, Mayfair Park, Nye and Iacoboni Libraries	April 27, 2016
UWMP Draft Available Online at www.lakewoodcity.org	April 27, 2016
Notification to Community of Public Comment Period	April 2016
Deadline for Written Comments	June 27, 2016
City Council Holds Public Hearing to Accept Public Comments and Adopt UWMP	June 28, 2016
Submittal to the State of California Department of Water Resources, State Library	June 30, 2016
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 30, 2016

Chapter 3: System Description

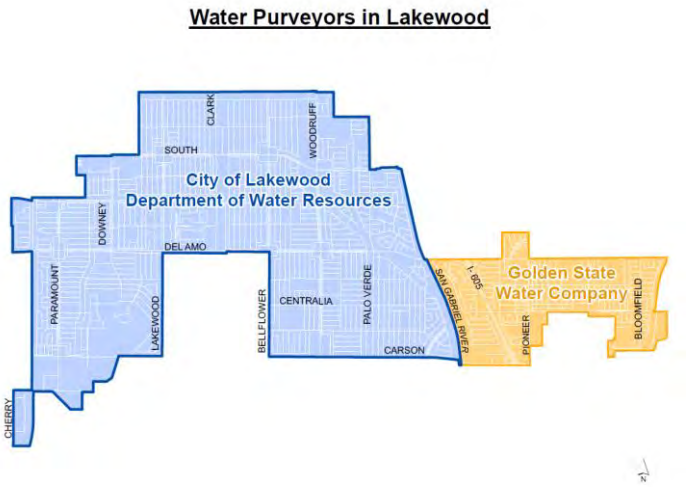
3.1 Description of Lakewood

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. Most Lakewood development occurred within a 20-year period after its incorporation in 1954.

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 4,400 active customer accounts and 60 inactive accounts in Lakewood.



Lakewood maintains approximately 195 miles of water mains, 18.5 miles of transmission mains, eleven water wells, a 2,500 gallons per minute water treatment facility, three water storage facilities with approximately 13.1 million gallons capacity, 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 the water storage facilities. All Lakewood water customers receive water through metered service connection.

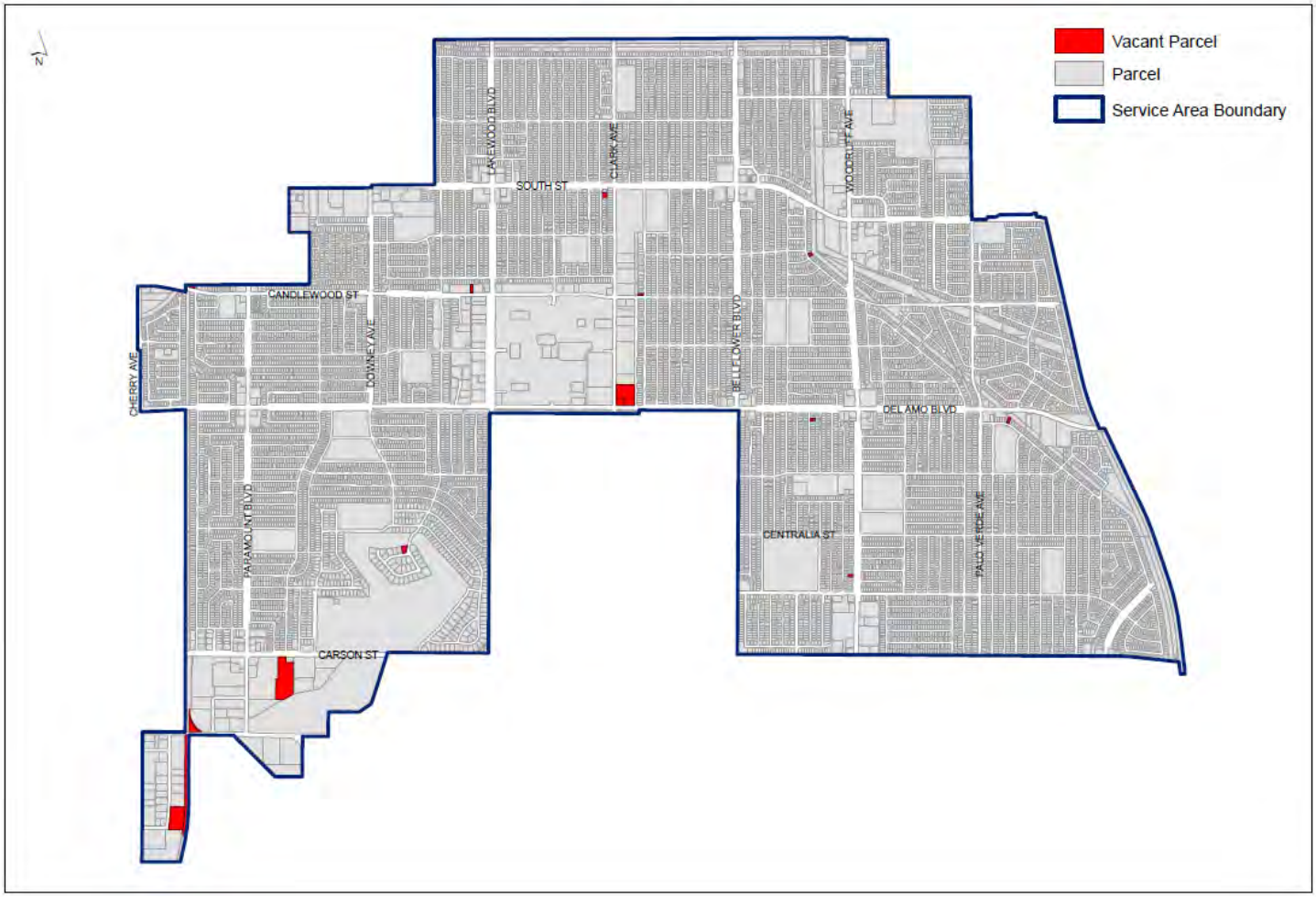
Land Use

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 2,875 housing units per square mile or 4.49 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 three department stores: Macy's, Nordstrom Rack and 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 city, provide warehousing functions.

City of Lakewood Water Department
Vacant Parcels
February 2016



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 0.5 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. The vacant parcels are indicated in red on the above map titled *"City of Lakewood Department of Water Resources Vacant Parcels February 2016"*.

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	49.3%
	▪ Multiple Family Homes- 2,215 Dwellings	65	1.3%
Commercial	▪ Lakewood Center Mall	135	2.7%
	▪ Financial/Office	22	0.4%
	▪ General Commercial	341	6.9%
Manufacturing/ Industrial	▪ Warehousing- 107 acres	107	2.2%
Public/Quasi Public	▪ City Parks/Facilities	341	6.3%
	▪ Public Schools	221	4.3%
	▪ Hospitals	6	0.1%
	▪ Religious/Private Education	46	0.9%
	▪ Streets	1,063	21.5%
	▪ Flood Control	39	0.8%
	▪ Railroad ROW	17	0.3%
	▪ Powerline ROW	120	2.4%
Miscellaneous	▪ Vacant Land- 22 acres	22	0.4%
Total		4,948	100.00%

The City currently maintains 20,339 metered water connections in the Department of Water Resources service area, 18,862 single family residential units and 2,215 multi-family units. The City of Lakewood Housing Element 2013-2021, approved by the Lakewood City Council in August 2013[1], indicates a total of potential growth of 862 multi-family dwellings units, of which 153 units are in the Department of Water Resources service area. This estimate is based on a density of 22 units per acre. These potential projects would be built on existing multi-family dwelling parcels.

The City has the potential to build 114 low to moderate income multi-family dwelling units in the Department of Water Resources service area on vacant parcels[2]. This is a net lot size of 4.51 acres.

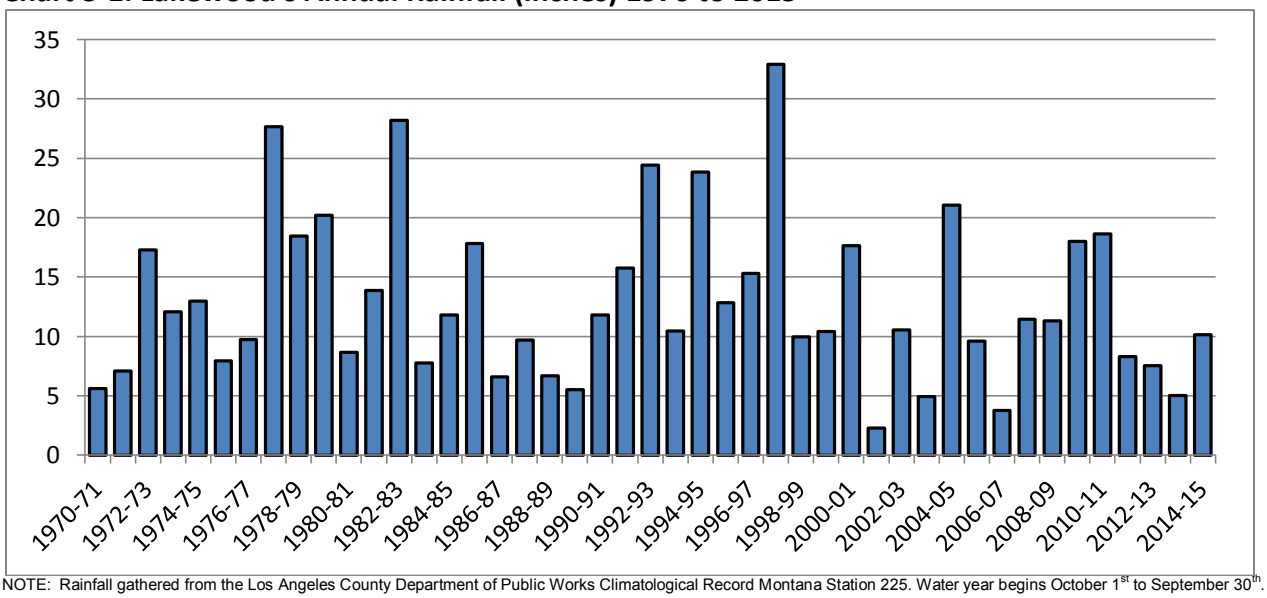
According to the City of Lakewood Housing Element 2013-2021, the population density was at a high of 3.77 in 1960, down to 3.03 in 2000, and up from 2000 to 3.10 in 2010. Considering the City does not have large areas for new development, future population increase will come from an increase in the number of persons per household as younger families move into the City.

Climate

Lakewood lies close enough to the ocean to benefit from sea breezes and marine cloud layer. The temperature averages 84ºF in the summer months and 66ºF in the winter months. Rainfall averages 12-14 inches annually. Rainfall for the 2014/15 water year totaled 10.12 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.

[1] City of Lakewood 2013-2021 Housing Element Page 4-2, IV – Housing Resources
[2] City of Lakewood 2013-2021 Housing Element Page 4-6, IV – Housing Resources

Chart 3-1: Lakewood's Annual Rainfall (inches) 1970 to 2015



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

The table below indicates the monthly evapotranspiration levels, rainfall and high/low temperatures in the Long Beach/Lakewood area for calendar year 2015.

2015 Lakewood's Average Monthly ETo, Rainfall and Temperature

	Monthly (in) ETo[3]	Monthly Rainfall (Inches)	Monthly Average Temperature (Fahrenheit)	
			Low	High
January	2.05	0.97	40.3	66.3
February	2.68	0.28	43.2	66.3
March	4.26	0.43	48.3	74.5
April	4.45	0.31	50.5	75.7
May	4.76	0.78	53.6	70.1
June	5.37	0.0	60.2	77.2
July	5.65	0.66	63.6	80.5
August	6.01	0.0	64.2	84.2
September	5.18	0.98	64.3	86.4
October	3.82	0.36	60.7	84.4
November	2.81	0.02	43.9	73.9
December	2.09	0.84	40.2	68.5
Annual	49.14	5.63	52.8	75.7

3.2 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 approximately 74 percent

[3] ETo from CIMIS Long Beach #174 (www.cimis.water.ca.gov)

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 3-2 is based on census tract data.

The 2020, 2025, 2030, and 2035 population projections are based on Southern California Area Governments (SCAG) estimates for the City of Lakewood[4]. However, SCAG's projections are preliminary and have yet to be adopted. Also, it should be noted that SCAG shows the City of Lakewood's actual population for 2012 at 80,600 with a 2020 projection of 81,500 (based on an increase of 0.02% every five years). This figure differs from the California Department of Finance that shows a 2014 population of 81,261 for the City of Lakewood and a 2015 population of 81,601. To consolidate the difference of opinions pertaining to the City of Lakewood's population, and the anticipation that most of the population growth has and will continue to occur outside of the Department of Water Resources' service area in the eastern portion of the city, which is served by Golden State Water Company, is to use the State Department of Water Resources Water Use Efficiency (WUE) Data tool that overlaid our service area GIS map in coordination with U.S. Census data of 2010.

The Lakewood 2013-2021 Housing Element summarizes the potential growth as:

> Development under the adopted General Plan will result in greater demand for water. However, the General Plan policies require managed growth and promote the development of adequate infrastructure prior to new development. Therefore, the gradual increase in demand for water services per year in conjunction with implementation of the policies is not anticipated to result in significant impacts on existing services. The Master Environmental Assessment (MEA) indicated that most areas served by the City have adequate fire flows that meet Los Angeles County Fire Department Standards.[5]

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 3-2: Lakewood Population Current and Projected

	1990	*1995*	*2000*	*2005*	*2010*	*2015*	*2020*	*2025*	*2030*	*2035*	*Data Source*
Lakewood, City of	73,557	75,513	79,345	83,079	80,048	81,601	81,500	82,315	83,138	83,300	U.S. Census Bureau, CA Dept. of Finance, & SCAG[1]
DWR Service Area	55,454	56,887	58,320	59,012	59,704	59,331	60,019	60,117	60,335	60,492	Water Use Efficiency (WUE) Data Tool for the City of Lakewood[2]

[1] U.S. Bureau of Census, Census Data Tract: 1990, 2000, 2010
California Department of Finance Population Estimates: 1995, 2005, 2015
Southern California Area Governments 2016 Data: 2020, 2025, 2030, 2035
[2] Water Use Efficiency (WUE) Data Tool for the City of Lakewood. http://www.water.ca.gov/urbanwatermanagement/uwmp20

[4] Draft 2016 RTP/SCS Growth Forecast by Jurisdiction by SCAG, http://www.scag.ca.gov/Documents/2016DraftGrowthForecastByJurisdiction.pdf
[5] City of Lakewood 2013-2021 Housing Element Page 5-14, V – Constraints on Housing

Chapter 4: System Water Use Current and Projected

4.1 Recycled versus Potable and Raw Water Demand

Actual Water Demand 2005, 2010 and 2015

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, capital, and debt service expenditures. The City currently maintains service connections to 20,339 active accounts, an increase of 61 customers since 2010. 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 4-1: Water Deliveries- Actual 2005

Water Use Sector	Metered		Unmetered		Total
	# 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	965	1,271	0	0	1,271
Industrial			0	0	
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 2010 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 1st and ends September 30th), moderate temperatures over the summer months, the nationwide economic downturn also affected water use and the call to conserve water.

Table 4-1A: Water Deliveries- Actual 2010

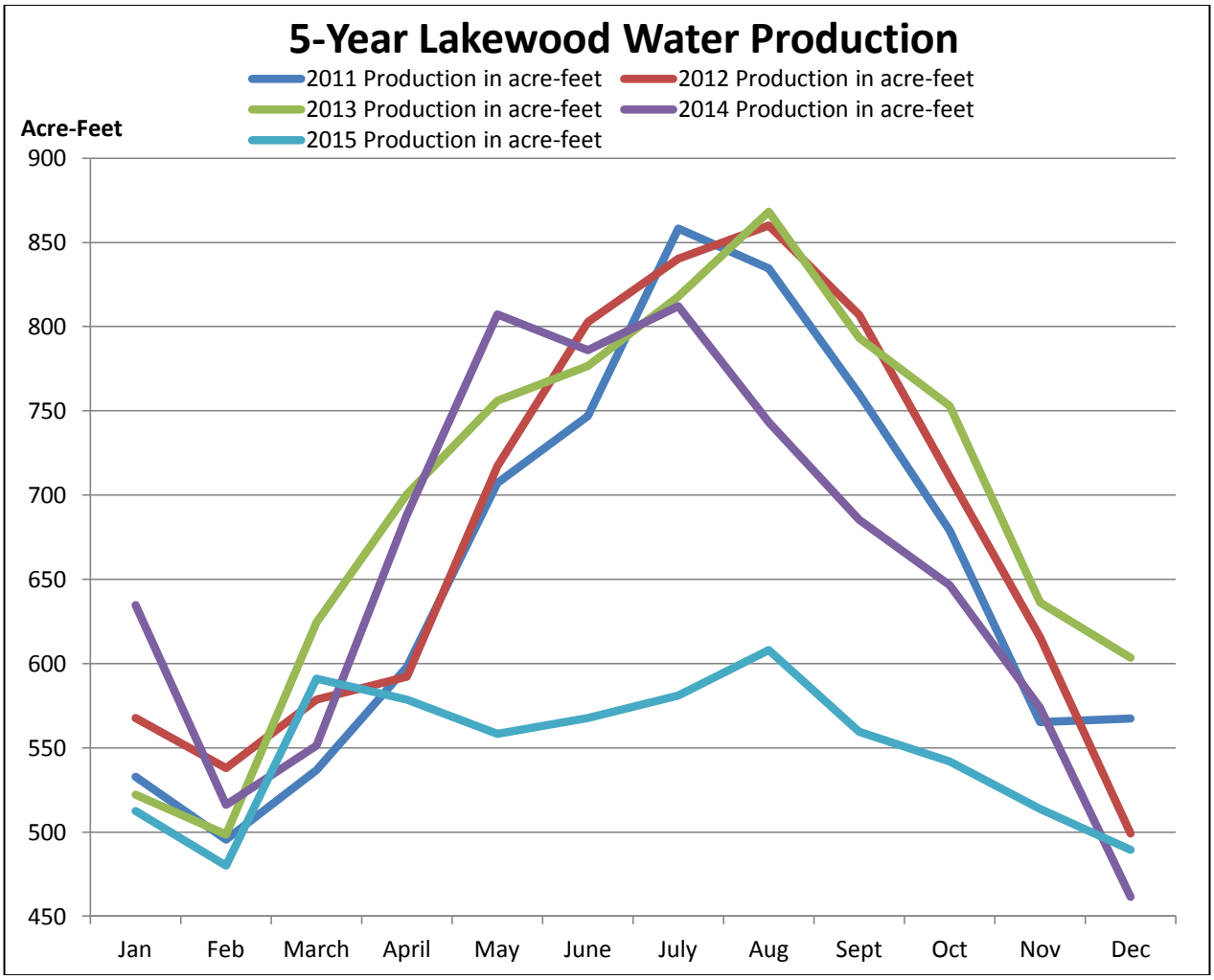
Water Use Sector	Metered		Unmetered		Total
	# of Accounts	Volume (af)	# of Accounts	Volume (af)	Volume (af)
Single Family	19,134	6,107	0	0	6,107
Multi-Family	206	352	0	0	352
Commercial	841	1,417	0	0	1,417
Industrial			0	0	
Institutional/Governmental	62	172	0	0	172
Landscape (includes recycled water deliveries)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

On the heals of the Emergency Drought Regulation proclaimed by California Governor Jerry Brown, on May 26, 2015, the Lakewood City Council adopted Urgency Ordinance 2015-6 Implementing the State Water Conservation Regulations in conformance with State Water Resources Control Board (SWRCB) watering restrictions and implemented Phase III of the city's outdoor water conservation restrictions. By the end of 2015, the City of Lakewood had achieved a 26% cumulative water conservation since June 2015 as compared to the same seven months in 2013. This resulted in production numbers much lower than was anticipited in the 2010 UWMP projections for 2015. The table below lists the actual 2015 water use data by water sectors listed in the California Water Code (CWC).

Table 4-1B: Demands for Potable and Raw Water – Actual 2015

	2015 Actual		
Use Type	# of Metered Accounts	Level of Treatment When Delivered	Volume (acre-feet)
Single Family	19,094	Drinking Water	4,812
Multi-Family	201	Drinking Water	254
Commercial	601	Drinking Water	752
Institutional/ Governmental	84	Drinking Water	78
Landscape	219	Drinking Water	278
		TOTAL	6,174
NOTES: Landscape does not include recycled water deliveries of 486 acre-feet via 41 metered accounts.			

The chart below illustrates water use in acre-feet for 2011 through 2015. As shown in the chart, water use in 2015 has decreased dramatically as a result of the State Mandated Emergency Water Conservation Regulation. The chart includes water produced solely for Lakewood customers and does not include any water delivered to the City of Long Beach as part of our Conjunctive Use Program.



4.2 Water Use by Sector

Projected Water Demand 2020, 2025, 2030, and 2035

The projected deliveries for 2020 are calculated using the "new normal" of water use. Since California has entered into its fifth year of drought, the State has resolved to view water more conservatively, conscientiously, and effectively. The City of Lakewood is no different. The calculations below takes into account actual and projected population, conversion of acre-feet to gallons of water used to calculate the City of Lakewood's current and projected gallons per capita per day.

Table 4-2: Potable gallons-per-capita-per-day – Actual & Projected

Year	2015 Actual	2020 PROJECTED	2025 PROJECTED	2030 PROJECTED	2035 PROJECTED
Population[1]	59,331	60,019	60,177	60,335	60,492
Acre-feet of Lakewood system used[2]	6,174	6,668	6,801	6,937	7,076
Convert Lakewood system use acre-feet to gallons	2,011,931,156	2,172,748,400	2,216,203,368	2,260,527,435	2,305,737,984
gallons per day	5,512,140	5,952,735	6,071,790	6,193,226	6,317,090
gallons-per-capita-per-day (gpcd)	93	99	101	103	104

[1] Uses population projections from table 3-2
[2] Acre-feet of Lakewood system use is taken from Table 4-1B

Table 4-2A below describes in detail and by sector projected water use taking into account an increase in population projections. Also, year 2020 shows an 8 percent increase in 2015 Actual numbers. This was done to account for the ending of the drought and water use increasing by 8 to 10 percent as the "new normal" i.e. customers naturally changing their long-term water use by using less water than before the drought but 8 to 10 percent more than what is currently being conserved during the drought.

Table 4-2A: Demands for Potable and Raw Water - Projected

Use Type	Additional Description	2010 UWMP PROJECTED 2020 WATER USE in acre-feet	Projected Water Use in acre-feet			
		2020 Initial Projections	2020	2025	2030	2035
Adjustment Percent			8%	2%	2%	2%
Single Family		6,885	5,197	5,301	5,407	5,515
Multi-Family		396	274	280	285	291
Commercial		1,229	812	828	845	862
Institutional/ Governmental		194	84	86	88	89
Landscape		368	300	306	312	319
Other	Hydrant Meters	1	0.42	0.42	0.42	0.42
	TOTAL	9,073	6,667	6,801	6,937	7,076

NOTES: Projected 2020 numbers include an 8% increase in water use as compared to 2015 Actuals. The 8% encompasses an increase in water use over 2015 numbers considering the drought should end but people are more conscious of their water use and will still use less than was previously projected. This projection is still 25 percent LESS than our 2010 UWMP projected for 2020 water use of 9,073 annual acre-feet based on 100 gallons-per-capita-per-day.

Table 4-2B: Total Water Demands

	2015	2020	2025	2030	2035
Potable and Raw Water	6,174	6,667	6,801	6,937	7,076
Recycled Water Demand	502	502	502	502	502
TOTAL WATER DEMAND	6,676	7,169	7,303	7,439	7,578
NOTE: Prior to 2020 a new Stormwater Capture Facility will be add to Bolivar Park for irrigation and groundwater recharge. Actual irrigation and water recharge amounts are still preliminary and are not included in the 2015 UWMP Update.					

4.3 Distribution System Water Losses

The City of Lakewood Department of Water Resources runs an accountable and efficient water transmission and distribution system. The City has meters at all of our well sites and customer service line connections. This tracks our supply and consumption volumes thus giving us the base data to audit our water supply on a monthly basis. The City has the capabilities to read our supply meters and bills our customer's bi-monthly for water service. In turn, our monthly supply numbers does not correlate to our billing data. To adjust for this difference, we take the average of two months of billing data and compare that to one month of well pumping/supply data. This comparison gives us a general information of how much water pumped is loss due to system leakage, meter inaccuracy, and other various factors.

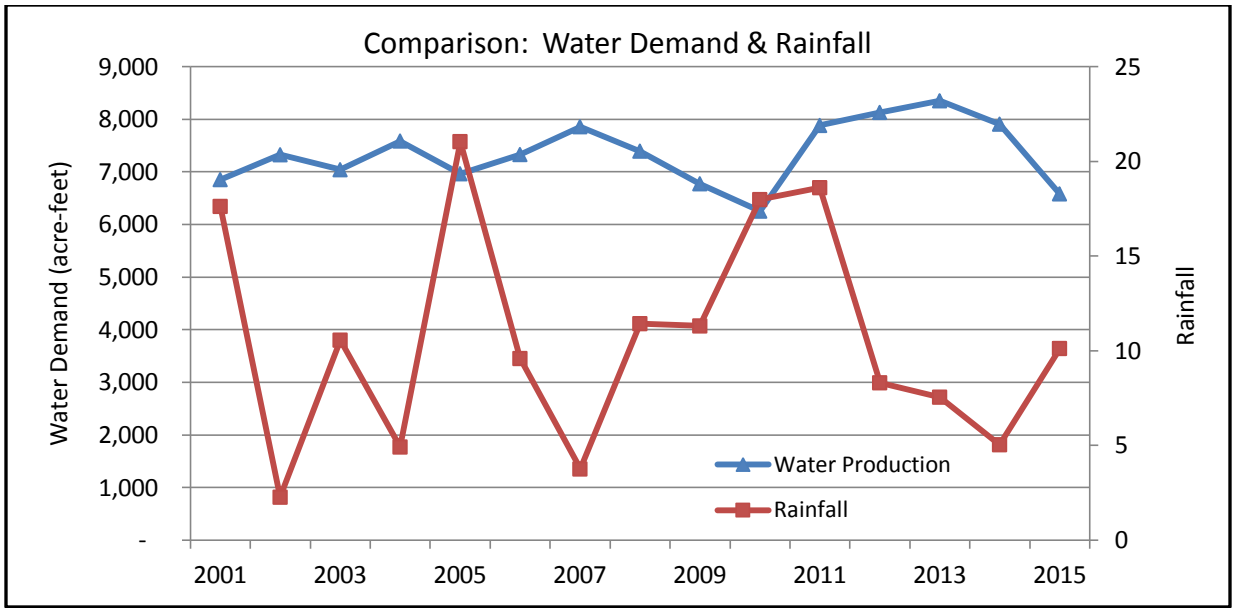
Using the American Water Works Association (AWWA) Method in calculating water loss from January 1, 2015 to December 31, 2015, the City has determined our water loss to be 327 acre-feet or about 6% of total water produced. See Appendix 1 for detailed analysis of 12-month water loss audit report.

Table 4-3: 12 Month Water Loss Audit Reporting

Reporting Period Start Dates (January – December 2015)	Volume of Water Loss (acre-feet)
	327
NOTE: Water loss calculated using AWWA-WAS-v5.	

4.4 Estimating Future Water Savings

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 target of 99 gallons per person per day by year 2020. As the following chart illustrates, outdoor irrigation naturally declines as rainfall increases.



Reducing Residential Demand

The Lakewood Department of Water Resources water consumption is divided into the following service types: 77% single-family residential, 11% commercial, 4% multi-family, 4% landscape irrigation, and 3% institutional/governmental. Therefore, the focus of conservation is on outdoor single-family residential use.

Table 4-4: 2005 - 2015 Comparison of Water Demand by Sector

	Consumption 2005 Actual (AF)	2005 Percent of Total	Consumption 2010 Actual (AF)	2010 Percent of Total	Consumption 2015 Actual (AF)	2015 Percent of Total
Single Family	6,689	76%	6,107	72%	4,812	78%
Multi-Family	413	5%	352	4%	254	4%
Commercial	1,271	14%	1,417	17%	752	12%
Industrial				-		-
Institutional/ Governmental			172	2%	78	1%
Landscape (No Recycled)	415	5%	444	5%	278	5%
Agriculture		-		-		-
Other – Fire Meters	-	-	-	-	0.39	0%
TOTAL	**8,788**		**8,492**		**6,174**	
NOTE: In 2005 Commercial and Institutional/Governmental were combined together.						

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 paid $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 800 square feet is eligible for the rebate. Unlike the device rebates, 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 six months to complete the project. The water customer must commit to keeping the area turf free for five years to receive the rebate. Residents can combine this rebate program with the device rebate offerings. For customers who wish to maintain their lawn but significantly decrease water runoff, overspray, and overwatering, the Department of Water Resources offers a subsurface irrigation rebate program *(a subsurface system pictured above)*. The rebate amount is $0.50 per square foot with a minimum of 40 and maximum of 800 square feet. Since the program began in 2011 over $56,000 in rebates have been made to Lakewood water customers.

All rebates are awarded as a credit on the water bill. See Attachment 1 for the details in the water conservation device and turf removal rebate programs.

Based on regional data, an average of 18% in water savings annually per household will be achieved by turf removal program.

Table 4-4A: Turf and Device Rebate Projects

FY 2011/12	FY 2012/13	FY 2013/14	FY 2014/15	FY 2015/16	FY 2015/16
				Completed	Pending Turf Project[1]
$1,227	$2,566	$5,927	$21,592	$25,261	$27,000
				56 projects ($10 - $860)	35 Applications ($195 - $800)

[1] Pending Rebates as of December 31, 2015

Reducing Commercial Water Demand

In December 2015, the City opted to allow the State of California's Model Water Efficient Landscape Ordinance (MWELO) to supersede Lakewood's 2009 Adopted Water Efficient

Landscape Ordinance. This revision applies to landscaped projects that are:

"

(1) new construction projects with an aggregate landscape area equal to or greater than 500 square feet requiring a building or landscape permit, plan check or design review;

(2) rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check, or design review;

(3) existing landscapes limited to Sections 493, 493.1 and 493.2; and

(4) cemeteries. Recognizing the special landscape management needs of cemeteries, new and rehabilitated cemeteries are limited to Sections 492.4, 492.11, and 492. 12; and existing cemeteries are limited to Sections 493, 493.1, and 493.2."[6]

Each landscape project is reviewed by the City of Lakewood's Community Development Department. Upon completion of the approved landscape installation, the developer must submit an as-built landscape plan prior to final project approval. Though Lakewood's water utility service is considered built out, redevelopment of commercial areas continues.

Since 2005, thirty-nine 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 of the 2009 Ordinance, the 2015 Updated MWELO requires that landscape projects water use has calculations to show that the evapotranspiration adjustment factor (ETAF) for the landscape project does not exceed a factor of 0.55 for residential areas and 0.45 for non-residential areas, exclusive of Special Landscape Areas. The ETAF for a landscape project is based on the plant factors and irrigation methods selected. The Maximum Applied Water Allowance (MAWA) is calculated based on the maximum ETAF allowed (0.55 for residential areas and 0.45 for non-residential areas) and expressed as annual gallons required. The Estimated Total Water Use (ETWU) is calculated based on the plants used and irrigation method selected for the landscape design. ETWU must be below the MAWA. And with this calculation, coupled with commercial and multi-family residential water meters dedicated to irrigation use, the Department of Water Resources may be able to monitor future irrigation water use and ensure compliance to the City's water conservation measures.

4.5 Water Demand for Lower Income Households

The 2013-2021 Lakewood Housing Element indicates that 6,059 households or about 25 percent of Lakewood's households earn income 80% less than the city's median income of $76,348. According to the American Community Survey[7] approximately six percent of

[6] 2015 Updated Model Water Efficient Landscape Ordinance – Department of Water Resources http://www.water.ca.gov/wateruseefficiency/landscapeordinance/

[7] 2005-2009 American Community Survey 5-Year Estimates Population and Housing Narrative Profile:

families considered extremely 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. Fifty-one percent of the 1,525 households (780 single-family low incomes and 745 multi-family low incomes) considered extremely low incomes live in an owner occupied house and 49 percent rent. Using this information and calculating water use based on the population estimates in Table 4-2 the projected water demand for the low income population is indicated in Table 4-5A below. Since the estimated water demand over the next 20 years will remain very near 2015 levels (only a 14% increase); therefore, the low income demand is expected to remain fairly constant.

Table 4-5: Inclusion in Water Use Projections

Are Future Water Savings Included in Projections?	No
If "Yes" to above, state the section or page number where citations of the codes, ordinances, etc… utilized in demand projections are found.	Location in UWMP: N/A
Are Lower Income Residential Demands Included In Projections?	No
NOTE: Future water savings are not projected for water use projections by sector because with our current tracking system this data is difficult to ascertain. However, an overall water use savings is calculated to account for outdoor irrigation savings as required and enforceable by the City's Emergency Water Conservation Ordinance.	

Table 4-5A: Low Income Projected Water Demands (acre-feet)

Low Income Water Demands	2015	2020	2025	2030	2035
Single Family Residential	200	200	200	200	200
Multi-Family Residential	191	191	191	191	191
TOTAL	**390**	**390**	**390**	**390**	**390**

Sales to Other Water Agencies

The City of Lakewood maintains emergency water connections with three neighboring utilities: Golden State Water Company (GSWC) and the Cities of Cerritos and Long Beach. The City has delivered water to Golden State Water Company and the City of Long Beach. In the past five years the City of Lakewood has delivered 5,390.97 acre-feet of water to supplement GSWC and the City of Long Beach water supply. Table 4-5B 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 4-5B: Sales to Other Water Agencies (acre-feet)

Water Distributed	2005	2010	2015	2020	2025	2030	2035
Golden State Water Company	0	37	0	1,000	1,000	1,000	1,000
City of Cerritos	0	0	0	500	500	500	500
City of Long Beach	0	0	1,116.98	500	500	500	500
TOTAL	**0**	**37**	**1,116.98**	**2,000**	**2,000**	**2,000**	**2,000**

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. While the City maintains two connections to Central Basin MWD for emergency use, it does not have a contract for water purchases at this time.

Chapter 5: SB X7-7 Baselines and Targets

5.1 Baseline Periods

In February 2008, Governor Schwarzenegger introduced a seven-part comprehensive plan for improving the Sacramento-San Joaquin Delta water and other related issues. As part of this effort, the Governor directed state agencies to develop a plan to reduce statewide per capita urban water use by 20 percent by the year 2020. This marked the initiation of the 20x2020 Water Conservation Plan. At that time, the goal seemed far-reaching yet attainable. The City of Lakewood calculated that it needed to hit a target of 103 gallons-per-capita-per-day (gpcd) as compared to our base year of 1996 through 2005 water use.

The Lakewood Department of Water Resources determined the base period for development of the 20 percent reduction by 2020 target by examining all the potential timeframes. The City's recycled water use does not exceed 10 percent of the water demand; therefore, the DWR used the 10-year base period. Fiscal Year 1996 to Fiscal Year 2005 (Tables SB X7-0 through SB X7-1) were 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 (See Attachment 1.)

All tables in this section are labeled in compliance with the 2015 UWMP Numbering System, i.e. tables in this section will start with "SB X7-7 Table ___".

SB X7-7 Table 0: Units of Measure Used in UWMP

Acre Feet
**The unit of measure is consistent with Table 2-1C*

SB X7-7 Table 1: Baselines Period Ranges

Baseline	Parameter	Value	Units
10- to 15-year baseline 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	4.91%	Percent
	Number of years in baseline period	10	Years
	Year beginning baseline period range	1996	
	Year ending baseline period range	2005	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2004	
	Year ending baseline period range	2008	

5.2 Method Used to Determine Population

The City of Lakewood is served by two water agencies – the Lakewood Department of Water Resources and Golden State Water District. Due to the complexity of figuring out the total population served when only partial of the city's census population is served by the Lakewood Department of Water Resources and in an effort to use consistent data, the State Department of Water Resources created a population data tool that uses a water supplier's historical population using GIS and U.S. Census data called the Water Use Efficiency (WUE) online data tool. This system calculates the population within a water supplier's service area and is the required standard for water agencies that provide water to only a section of a city. Therefore, the population data from the 2010 UWMP has been updated to reflect the data set provided by the State.

SB X7-7 Table 2: Method for Population Estimates

☐	**1. Department of Finance** (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available.
☐	**2. Persons-per-Connection Method**
☑	**3. State DWR Population Tool**

The table below is the detailed service area population using the State Department of Water Resources population numbers for 10 to 15-year baseline and 5-year baseline population figures.

SB X7-7 Table 3: Service Area Population

Year		Population
10 to 15 Year Baseline Population		
Year 1	1996	57,174
Year 2	1997	57,460
Year 3	1998	57,747
Year 4	1999	58,033
Year 5	2000	58,320
Year 6	2001	58,458
Year 7	2002	58,597
Year 8	2003	58,735
Year 9	2004	58,874
Year 10	2005	59,012
5 Year Baseline Population		
Year 1	2004	58,874
Year 2	2005	59,012
Year 3	2006	59,150
Year 4	2007	59,289
Year 5	2008	59,427
2015 Compliance Year Population		
2015		59,331
NOTES: 2015 is calculated using the State's WUE data for the City of Lakewood.		

5.3 Gross Water Use

California Water Code §10608.20 requires each retail water supplier to establish a baseline of daily per capita water use based on historical volume of water produced during a 10 to 15-year period and also a 5-year period. The following table outlines water production during those required periods.

SB X7-7 Tables 4 and 4-A Combined: Annual Gross Water Use

Baseline Year *From SB X7-7 Table 3*		**Volume Into Distribution System**	**Deductions**					**Annual Gross Water Use (acre-feet)**
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water	Water Delivered for Agricultural Use	Process Water	
10 to 15 Year Baseline - Gross Water Use 100% Groundwater								
Year 1	1996	7,080	0		0	0	0	7,080
Year 2	1997	7,367	0		0	0	0	7,367
Year 3	1998	6,480	0		0	0	0	6,480
Year 4	1999	6,735	0		0	0	0	6,735
Year 5	2000	7,089	0		0	0	0	7,089
Year 6	2001	6,680	0		0	0	0	6,680
Year 7	2002	7,142	0		0	0	0	7,142
Year 8	2003	6,946	0		0	0	0	6,946
Year 9	2004	7,386	0		0	0	0	7,386
Year 10	2005	6,757	0		0	0	0	6,757
Year 11	0	0			0		0	0
Year 12	0	0			0		0	0
Year 13	0	0			0		0	0
Year 14	0	0			0		0	0
Year 15	0	0			0		0	0
10 - 15 year baseline average gross water use								**6,966**
5 Year Baseline - Gross Water Use 100% Groundwater								
Year 1	2004	6,735	0		0		0	6,735
Year 2	2005	7,089	0		0		0	7,089
Year 3	2006	6,680	0		0		0	6,680
Year 4	2007	7,142	0		0		0	7,142
Year 5	2008	6,946	0		0		0	6,946
5 year baseline average gross water use								**6,918**
2015 Compliance Year - Gross Water Use 100% Groundwater								
2015		6,582	1,117		0		0	5,465

Water use depends on various factors such as population, climate, land use patterns, (lot sizes, square footage of irrigated landscape), the age and condition of the water distribution infrastructure (water losses), and industrial and socioeconomic characteristics (the cost of water and income level of residents). Therefore, the volume of water produced can vary significantly from year to year.

5.4 Baseline Daily per Capita Water Use

The State requires water agencies to develop a 10- or 15-year base (or baseline) period to develop a target level of per capita water use which applies only to a water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water. The City of Lakewood used a 5-year baseline period to determine the minimum required reduction in water use by 2020. The "daily per capita water use" is based on the water used per person per day within the City. The daily per capita water use is estimated by dividing gross water use by the service area population by the amount of water produced. The City's baseline daily per capita water uses were determined for each baseline years of 1996 to 2005 and 2004 to 2008 and for 2015 compliance year. This information is detailed in SB X7-7 Table 5.

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)

Baseline Year *From SB X7-7 Table 3*		Service Area Population *From SB X7-7 Table 3*	Annual Gross Water Use *From SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1996	57,174	7,080	111
Year 2	1997	57,460	7,367	114
Year 3	1998	57,747	6,480	100
Year 4	1999	58,033	6,735	104
Year 5	2000	58,320	7,089	109
Year 6	2001	58,458	6,680	102
Year 7	2002	58,597	7,142	109
Year 8	2003	58,735	6,946	106
Year 9	2004	58,874	7,386	112
Year 10	2005	59,012	6,757	102
Year 11	0	0	0	
Year 12	0	0	0	
Year 13	0	0	0	
Year 14	0	0	0	
Year 15	0	0	0	
10-15 Year Average Baseline GPCD				**107**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2004	58,874	6,735	102
Year 2	2005	59,012	7,089	107
Year 3	2006	59,150	6,680	101
Year 4	2007	59,289	7,142	108
Year 5	2008	59,427	6,946	104
5 Year Average Baseline GPCD				**104**
2015 Compliance Year GPCD				
2015		**59,331**	**5,465**	**82**

5.5 2015 and 2020 Targets

The City of Lakewood is required to set a 2020 water use target and a 2015 interim target using one of the following four methods:

- Method 1: Eighty percent of the water supplier's baseline per capita water use
- Method 2: Per capita daily water use estimated using the sum of performance standards applied to indoor residential use; landscaped area water use; and CII uses
- Method 3: Ninety-five percent of the applicable state hydrologic region target as stated in the State's April 30, 2009, draft 20x2020 Water Conservation Plan
- Method 4: An approach developed by DWR and reported to the Legislature in February 2011

According to the State Board, a target may need to be adjusted to achieve a minimum reduction in water use regardless of the target method and that the Water Code directs water suppliers to compare their actual water use in 2020 with their calculated targets to assess compliance. The provisions in *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* established 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 107 gallons per capita per day using the calculations for the 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. Eighty percent of 107 per capita per day is 85 gallons per capita per day. Since this is below the 100 per capita per day floor, Lakewood's 2020 target is 99 gallons per capita per day *(the State Board's new automated calculation electronic system sets our 2020 target to 99 gpcd)*. The interim goal is the midpoint, 103 gallons per capita per day.

All baseline, target, and compliance-year water use estimates are calculated and reported in gallons per capita per day. SB X7-7 Table 6 summarizes the City of Lakewood's 2015 gallons per capita per day compliance requirement.

SB X7-7 Table 6: Gallons per Capita per Day Summary from Table SB X7-7 Table 5

10-15 Year Baseline GPCD	107
5 Year Baseline GPCD	104
2015 Compliance Year GPCD	82

Below is a summary table of all SB X7-7 findings detailed in Chapter 5.

Table 5-6 Baselines and Targets Summary

Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	*1996*	*2005*	*107*	*103*	*99*
5 Year	*2004*	*2008*	*104*		
*All values are in gallons-per-capita-per-day (GPCD)					

5.8 Compliance Daily per Capita Water Use

The steps taken in the last 30 years to improve the reliability of Lakewood's water supply have proved beneficial. Construction of the recycled water distribution system, acquisition of additional water rights to eliminate the purchase of import supplies, and community response to the water-use efficiency and conservation message situate the City in an enviable position. Based on the conservation calculation in the UWMP, the City of Lakewood has met its interim target of 103 gallons per capita per day (gpcd) for 2015. The City of Lakewood's target by 2020 in compliance with SB X7-7 is 99 gpcd, and the city is confident that it will remain in compliance with the 2020 goal.

The SB X7-7 Tables interwoven in this Chapter and all other SB X7-7 Tables required by the State can be found in Appendix 2.

5.9 Regional Alliance

The Water Conservation Act of 2009 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 Stetson Engineers Inc. to prepare an update to the 20x2020 Regional Alliance Target/Report of 2011. The 2016 and 2011 versions of the Reports can both be found in Attachment 2.

Chapter 6: System Supplies Water Sources

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

6.1 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 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 $1,013 an acre-foot for treated water.

Any need to return to purchasing MWD supplies would require 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.

6.2 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.[8]

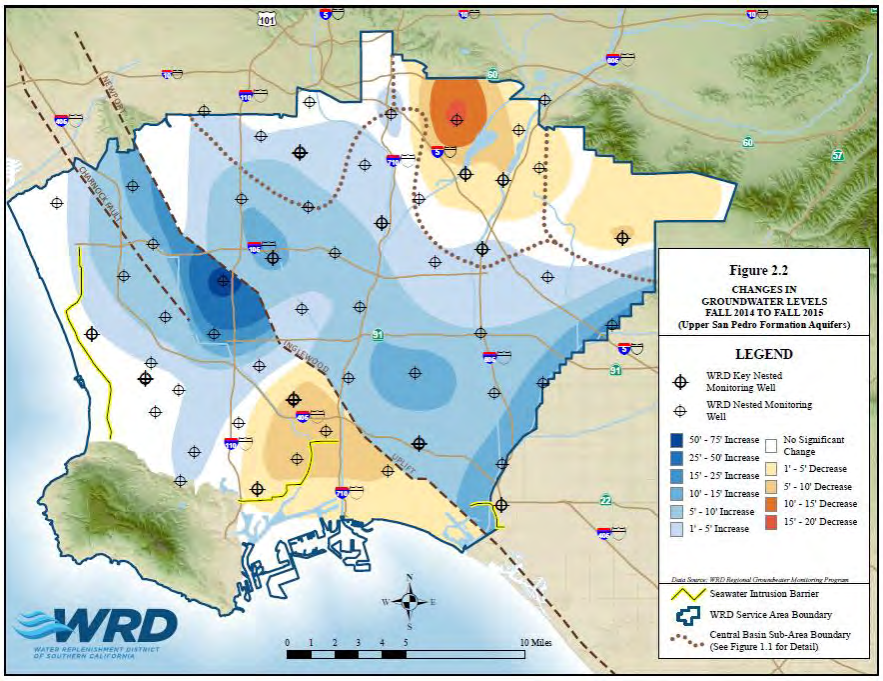
The physical characteristics of the Los Angeles Forebay, located at the Los Angeles River, and the Montebello Forebay, located at the Whittier Narrows, allow for the recharge of the Central Groundwater Basin. According to *California's Groundwater Bulletin 118*, these areas "have unconfined groundwater conditions and relatively interconnected aquifers that extend up to 1,600 feet deep…."[8]. The Central Groundwater

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

Basin consists of eight aquifers and aquicludes. The main freshwater bearing aquifers are the Gaspur, Gardena, Gage, Silverado, Lynwood and Sunnyside aquifers.

Aquifer/ Aquiclude8[8]	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 water from the Sanitation District of Los Angeles County. The Water Replenishment District of Southern California (WRD) purchases import supplies and recycled water for groundwater replenishment. The WRD also purchases import and recycled supplies to maintain seawater intrusion barriers.

According the WRD, the groundwater levels in the Central Basin Pressure Area increased an average of 7 feet during water year 2014/15. (See above map.)

Central Basin Adjudication

The Central Groundwater Basin became an adjudicated basin in 1966 (Attachment 3). The third Central Basin Judgment Amendment was entered by the Los Angeles Superior Court on December 23, 2013 (Attachment 4). In it, the Court allows the water rights

holders to have direct input into how the Judgment is administered and enforced. The Judgment confirms the Department of Water Resources retirement as the Court appointed Watermaster. Under the new Judgment, the Watermaster is composed of three bodies; one of which is the Water Rights Panel (Panel), the second is the Administrative Body (WRD) to accept pumping reports and summarize records for review by the Panel, and the third body is the Storage Panel which consists of the Water Rights Panel plus the WRD Board of Directors.

The Water Rights Panel is made up of seven Central Basin water rights holders. Six are elected by their representative group, with votes weighted by water rights; one member by those holding less than 3,000 acre-feet, one by the Small Pumpers Group, one by those holding between 3,000 and 10,000 acre-feet, and three by those holding greater than 10,000 acre-feet water rights APA. The seventh Panel Member is elected at large by all water rights holders at one vote each. The Water Rights Panel began its Watermaster duties in July 2014.

The Court established groundwater pumping rights at the time of adjudication, and the total allowable extractions from the basin in a given year are 330,000 acre-feet.

Lakewood's Groundwater Production

The City of Lakewood owns 9,432 acre-feet of groundwater rights in the Central Groundwater Basin. In addition, the City has drought carry over from 1977 of 0.59 acre-feet and 1991 of 1,929.38 acre-feet of water that can be used at any time. There are ten potable production wells that extract enough water to meet average and peak demand. The recycled water supply makes up the remainder of the City's total water supply.

In 2015 Lakewood pumped 6,582 acre-feet of water for use by City of Lakewood customers and an additional 1,117 acre-feet as a partnership with the City of Long Beach Conjunctive Use Program. Lakewood leased a total of 2,500 acre-feet of water to other water purveyors.

Table 6-1: Groundwater Volume Pumped

Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
Alluvial Basin	Central Groundwater Basin	7,882	8,129	8,351	7,906	6,582
TOTAL (acre-feet)		7,882	8,129	8,351	7,906	6,582

2015 Production in acre-feet

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	**TOTAL**
Delivered to Long Beach:	221	160	0	0	53	60	77	108	106	112	110	109	**1,117**
Total used by City of Lakewood Customers:	513	480	591	579	558	568	581	608	559	542	514	489	**6,582**

The City projects that the groundwater rights and allowable carry over currently owned by the City will meet water demand during normal water supply periods for the 20-year planning period. Only the supply from Well #27 requires treatment prior to entering the distribution system.

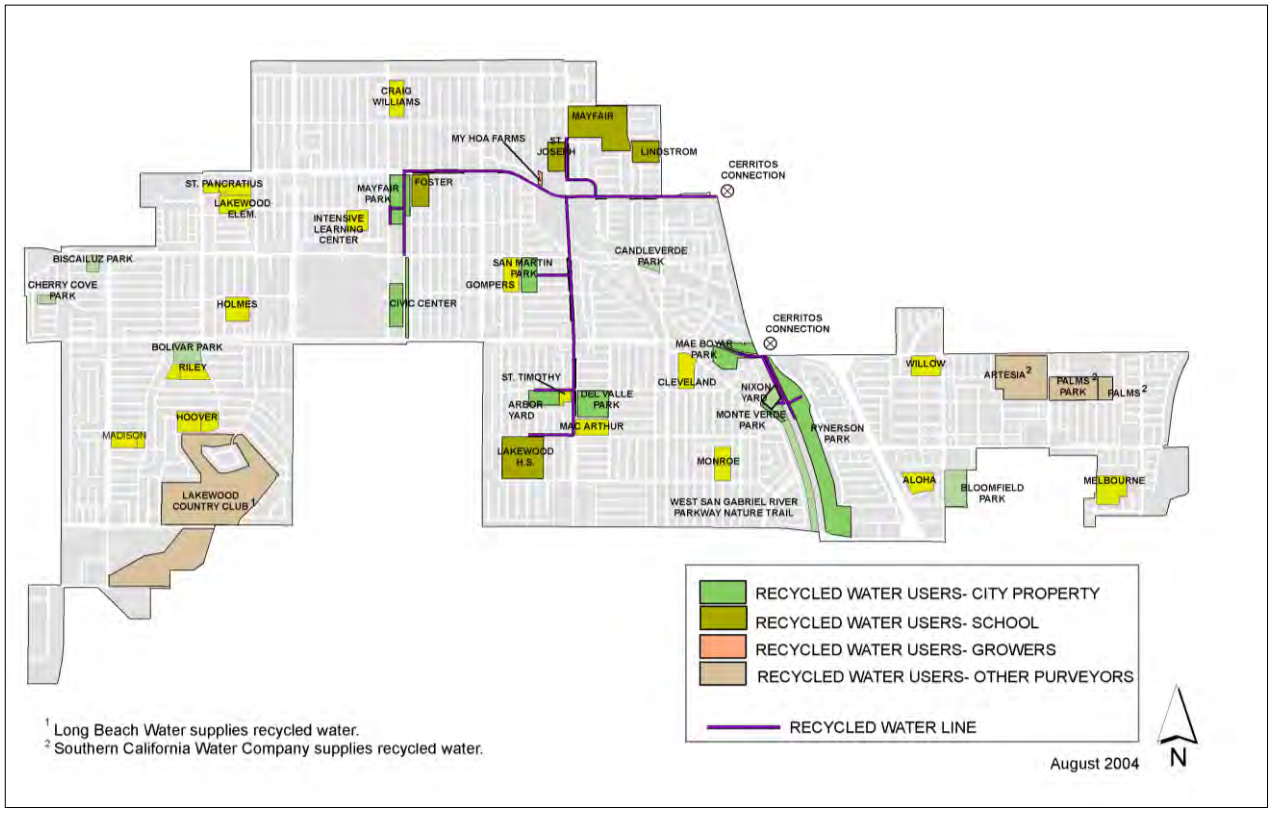
6.3 Wastewater and Recycled Water

Lakewood depends on 100% groundwater from the Central Groundwater Basin for drinking water and utilizes recycled water for 70% of the City's irrigation. Lakewood has operated a recycled water system since 1989. Participating agencies for operation of Lakewood Recycled Water Systems include:

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 25 years, the City of Lakewood has reduced its reliance on potable water by 11,760 acre-feet or an average of 470 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. The City of Lakewood maintains three metered recycled water 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.

Chart 6-3: City of Lakewood Recycled Water System



The wastewater from the City of City of Lakewood service area was collected and treated at the Long Beach Water Reclamation Plant (LBWRP) located at 7400 E. Willow Street, Long Beach, CA 90815 (Attachment 5). The LBWRP has a design capacity of 25 million gallons per day (MGD). The discharge point from this facility is into Coyote Creek downstream of Willow Street and upstream of the confluence with the San Gabriel River. The Sanitation District's treatment facility from which the City of Lakewood receives recycled water is the Los Coyotes Water Reclamation Plant (LCWRP), 16515 Piuma Avenue, Cerritos, CA 90703. The LCWRP has a design capacity of 37.5 MGD. The discharge point from this facility is into the San Gabriel River just downstream of Alondra Blvd.

Recycled water produced by the LCWRP is either delivered through recycled water distribution systems operated by the City of Cerritos, the City of Lakewood, the City of Bellflower, or the Central Basin Municipal Water District (CBMWD) for beneficial, non-potable reuse, or it is discharged into the San Gabriel River where it flows into the Pacific Ocean. Recycled water produced by the LBWRP is either delivered through recycled water distribution systems operated by the Long Beach Water Department (LBWD) for beneficial, non-potable reuse, or to the Water Replenishment District of Southern California for further advanced treatment and injection into the Alamitos Seawater Intrusion Barrier, or it is discharged into Coyote Creek which joins the San Gabriel River before it flows into the Pacific Ocean.

Table 6-2: Wastewater Collected Within Lakewood Service Area in 2015

Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party?
Sanitation Districts Of Los Angeles County	Metered	27,343	Sanitation Districts Of Los Angeles County	Long Beach Water Reclamation Plant (LBWRP)	No	No
Total Wastewater Collected from Service Area in 2015:		27,343				

Recycled water produced and treated by both the LCWRP and LBWRP is at the tertiary level. The treatment process consists of primary sedimentation, biological oxidation, coagulation, secondary clarification, media filtration, and disinfection using chlorine. The wastewater collection and treatment system in the Sanitation Districts' Los Angeles metropolitan service area (i.e., the area outside of the City of Los Angeles and south of the San Gabriel Mountains), known as the Joint Outfall System (JOS) is interconnected between a main ocean disposal plant in the City of Carson and six WRPs located upstream in the trunk sewer system. The upstream WRPs take a portion of the wastewater flow generated in the JOS into their facilities for treatment. As such, the tributary service area for the LCWRP is generally to the north and northeast of the plant. The tributary service area for the LBWRP is generally to the north and west of the plant. Noteworthy 2015 information concerning the Sanitation District of Los Angeles County as it relates to the City of Lakewood and local surrounding agencies includes:

- Approximately 24.41 MGD of wastewater was treated at the LCWRP,
- Approximately 14.68 MGD of wastewater was treated at the LBWRP,
- Approximately 20.75 MGD of recycled water was produced and discharged from the LCWRP,
- Approximately 12.44 MGD of recycled water was produced and discharged from the LBWRP,
- Approximately 0.44 MGD (a total of 158.76 million gallons) of recycled water from the LCWRP was reused within the City of Lakewood's service area,
- An additional 0.08 MGD (a total of 29.78 million gallons) of recycled water from the LCWRP was delivered through the CBMWD and Golden State Water Company and reused within the City of Lakewood, and
- Approximately 5.69 MGD (a total of 2,075.33 million gallons) of recycled water from the LCWRP was delivered through the Cerritos, Lakewood, Bellflower and CBMWD distribution systems and reused.

Table 6-3: Wastewater Treatment and Discharge Within Service Area in 2015

Wastewater Treatment Plant Name	Discharge Location	Discharge Location Description	Wastewater Discharge ID Number	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2015 volumes			
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
Long Beach Water Reclamation Plant (LBWRP)	Los Coyotes Water Reclamation Plant	Coyote Creek downstream of Willow Street	NPDES No. 001	River or creek outfall	Yes	Tertiary	27,343	23,243	493	6,374
						Total	**27,343**	**23,243**	**493**	**6,374**

The tables below details our actual 2015 recycled in comparison to projected recycled water use. In the 2010 UWMP Update, it was projected that the City of Lakewood would use 450 acre-feet in 2015. However, due to the addition of the recycled fire hydrants for irrigation, the City's recycled water use increased to 502 acre-feet. There is no future plan to expand our water distribution system; therefore, projected water use remains consistent at 502 acre-feet over the next 20-years.

Table 6-4: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area

Name of Agency Producing (Treating) the Recycled Water:		CITY OF CERRITOS					
Name of Agency Operating the Recycled Water Distribution System:		CITY OF LAKEWOOD					
Supplemental Water Added in 2015		N/A					
Source of 2015 Supplemental Water		N/A					
Beneficial Use Type	General Description of 2015 Uses	Level of Treatment	2015	2020	2025	2030	2035
Landscape irrigation (excludes golf courses)	Irrigation of Parks and Medians	Tertiary	502	502	502	502	502
	Total:		502	502	502	502	502

6.4 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. Currently, seawater desalination is not a cost-effective option for water supply in Long Beach, primarily due to the high cost of energy needed for operations and several abrasive environmental impacts. At this time,

the costs associated with importing water from northern California and the Colorado River is far less. However, as the costs of imported water increase over time and the costs of desalination, and its environmental impacts, decrease, made possible by advances in technology, seawater desalination may become a more feasible asset in water resources management in the future.

6.5 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 shortage emergency associated with water quality problems, disaster, drought, and system maintenance. Each connection can provide up to 5,000 gallons per minute of supply. 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 above shows the locations of the emergency interconnections.

6.6 Summary of Existing and Planned Sources of Water

The City currently maintains 41 service connections to the recycled water distribution system. All recycled water purchased 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. In 2015, the City added three recycled water fire hydrants to fill up a water wagon and use the recycled water to irrigate medians previously irrigated with potable water. In addition, the City maintains one service connection with a commercial grower that uses this supply to maintain inventory. Since this recycled water supply is used solely for irrigation, the demand varies with the weather. In hot dry years recycled water demand meets the projected demand of 502 acre-feet. Attributed to the current drought of 2012 to present, the recycled water demand has increased significantly. Wet years reduce recycled water demand.

Table 6-5: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual

Use Type		2010 Projection for 2015	2015 Actual Use
Agricultural irrigation			
Landscape irrigation (excludes golf courses)		450	502
Golf course irrigation			
Commercial use			
Industrial use			
Geothermal and other energy production			
Seawater intrusion barrier			
Recreational impoundment			
Wetlands or wildlife habitat			
Groundwater recharge (IPR)			
Surface water augmentation (IPR)			
Direct potable reuse			
Other	*Type of Use*		
	Total	450	502

The Central Basin Groundwater judgment sets out the annual pumping rights of each adjudicated water rights holder; provides for carryover of 50% of annual pumping rights for one year, or 35% carryover under the 'drought carryover' provisions; 20% over-pumping to be paid back the following year, or prorated over the following 5 years under specified conditions; provides for an exchange pool wherein a right not used by one party can be made available to another. Lakewood's adjudicated pumping allocation is 9,432 acre-feet with opportunities to increase that amount through carryover when deemed necessary.

Table 6-6 and 6-7 can be found in the Appendix 3. Tables 6-8 and 6-9 below examine the City's current and projected potable and recycled water supplies.

Table 6-8: Water Supplies — Actual

Water Supply	Additional Detail on Water Supply	2015	
		Actual Volume	Water Quality
Groundwater		9,432	Drinking Water
Recycled Water		502	Recycled Water
	Total	11,864	
Groundwater includes allocated pumping allocation of 9,432. In addition, Lakewood has 1991 drought carryover of 1,929.38 acre-feet plus 1977 drought carryover of 0.59 acre-feet for a total of 11,362 acre-feet groundwater available to the City of Lakewood.			

Table 6-9: Water Supplies — Projected

	Projected Water Supply			
Water Supply	**2020**	**2025**	**2030**	**2035**
	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Groundwater	9,432	9,432	9,432	9,432
Recycled Water	502	502	502	502
Total	9,934	9,934	9,934	9,934

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 6 contains the complete study.) The study estimates build out of the recycled water system would result in approximately 159 acre-feet of potential additional 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. At the time of the study, the cost of pipeline installation and service connections were estimated at over $7.25 million.

In further review of expanding the City's recycled irrigation system, there is roughly 3.9 miles of distribution pipeline that was not included in the study. Therefore, this brings the total pipeline to be laid at 11.6 miles with the additional pipeline costs at $2.8 Million (column B of Table 6-10). Also, the 2010 estimate does not include appurtenances such as pressure regulators, backflow preventers, irrigation controllers, valves, notification tags, etc. (column D of Table 6-10) that is required for the system to work at the endpoint. Next, a current value estimate was added as compared to 2010 dollars to be $15.4 Million and a 15% contingency was also added bringing the total recycled water system expansion cost to $17.710 Million in today's dollars.

6-10: Recycled Water System Expansion

A	B	C	D	E	F
				Contingency	15%
Recycled Water Study 2010	Additional Pipe	2010 System Costs	2010 Cost Including Extras	2015 Value	**TOTAL w/ Contingency**
$7,250,668	$2,779,920	$10,030,588	$14,042,823	$15,400,000	**$ 17,710,000**

An additional factor that could influence the recycled expansion is Cerritos' ability to provide additional recycled water. The City of Cerritos indicated that the existing system could meet Lakewood's additional recycled water needs. According to Cerritos 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 2010 Urban Water Management Plan Update, two 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 plans to drill one or two replacement wells in 2017-2020.

Chapter 7: Water Supply Reliability Assessment

7.1 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. 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 recharge 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. 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 or MWD connections. 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.

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 City allocates funds annually for the purchase or lease of groundwater extraction rights.

A change in the Central Groundwater Basin Judgment also allows greater flexibility for the groundwater producer. The City is able to carryover up to 50 percent in 2015 and 60 percent in 2016 in excess of our annual water allowance. This allows us to bank water during wet years and for extractions during periods of drought without harming the overall operation of the basin.

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 moving forward with their Groundwater Reliability Improvement Program (GRIP) and Water Independence Now (WIN) continues to pursue projects that develop local, sustainable sources of water for use in groundwater replenishment.

The GRIP Recycled Water Project includes the development of a new water supply for groundwater replenishment. This program is a major component of WRD's Water Independence Now (WIN) strategy to become completely independent from imported water supplies and establish local sustainability for the groundwater basins. For GRIP, WRD proposed to use an additional 21,000 acre-foot per year (AFY) of recycled water for groundwater recharge via surface spreading in the Montebello Forebay Spreading Grounds (MFSG). The 21,000 AFY of new replenishment supply is scheduled to be online in 2018.

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.

7.2 Reliability by Type of Year

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. The table below lists the years that the City of Lakewood identifies as the historical average, single driest year, and the driest multi-year period. These years are known as the base years. The "available supplies" column identifies specifies the percentage and/or volume of water supply expected if there were to be a repeat of the historical dry base year.

Table 7-1: Basis of Water Year Data

Year Type	Base Year	Volume Available	% of Average Supply
Average Year	2008	10,998	100%
Single-Dry Year	1990	10,847	99%
Multiple-Dry Years 1st Year	1989	10,757	98%
Multiple-Dry Years 2nd Year	1990	10,847	99%
Multiple-Dry Years 3rd Year	1991	10,428	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. Tables 7-2 and 7-3 below, detail projections for normal water year supply and demand totals from 2020 to 2035.

Table 7-2: Normal Year Supply and Demand Comparison

	2020	2025	2030	2035
Supply totals	9,934	9,934	9,934	9,934
Demand totals	7,169	7,303	7,439	7,578
Difference	2,765	2,631	2,495	2,356

Single Dry Water Supply Year

Lakewood chose FY1990 as the single dry year. 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.

Table 7-3: Single Dry Year Supply and Demand Comparison

	2020	2025	2030	2035
Supply totals	9,432	9,432	9,432	9,432
Demand totals	6,667	6,801	6,937	7,076
Difference	2,765	2,631	2,495	2,356

Multiple Dry Water Supply Years

Lakewood chose FY1989 to FY1991 as the multiple dry year period. 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.[9] (See Attachment 7 for the historical amounts of water used for Central Basin recharge.)

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.

The multiple-dry year forecast is based on a reduction of water between 95 and 99 percent. As Table 7-4 indicates Lakewood's water supplies are in excess of demand through 2035.

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

Table 7-4: Multiple Dry Years Supply and Demand Comparison

		2020	2025	2030	2035
First year	Supply totals	9,243	9,243	9,243	9,243
	Demand totals	6,667	6,801	6,937	7,076
	Difference	2,576	2,442	2,306	2,167
Second year	Supply totals	9,149	9,149	9,149	9,149
	Demand totals	6,667	6,801	6,937	7,076
	Difference	2,482	2,348	2,212	2,073
Third year	Supply totals	8,677	8,677	8,677	8,677
	Demand totals	6,667	6,801	6,937	7,076
	Difference	2,010	1,876	1,740	1,601

Current Water Supply Reliability

As a groundwater producer, Lakewood benefits from 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 1,929.97 acre-feet in drought carryover, and maximizes its allowable 50 percent carryover or 4,716 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. The Table below indicates the amount of water that is currently available to Lakewood water customers. The groundwater extraction is the total annual pumping allocation and 50 percent carryover. Recycled water is demand driven. The purchase of recycled water is based on customer demand, which varies based on local rainfall.

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.

Chapter 8: 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 8 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 10 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." [10] 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 8-1 places the shortages into stages and 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. As a result of the drought, in 2015 the City Adopted an Emergency Drought Regulation to reduce water use by 20% from June 2015 till October 2016. The City surpassed its State mandated water use with a cumulative water savings of 26%.

Table 8-1: Stages of Water Shortage Contingency Plan

Stage	% Supply Reduction	Water Supply Condition
PHASE I	10%	Declaration of Drought by State or Regional Agency Calling for 10% Reduction
PHASE II	20%	Declaration of Drought by State or Regional Agency Calling for 20% Reduction
PHASE III	30%	Declaration of Drought by State or Regional Agency Calling for 30% Reduction
PHASE IV	40%	Halt of artificial recharge of groundwater basin over 3 year period
PHASE V	50%	Halt of artificial recharge of groundwater basin over 5 year period

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

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

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 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

As of 2015, the conservation plan has been amended again. Previously, the City had a tiered water rate structure in place to charge high water users more for using more water. However, in light of the San Juan Capistrano tiered rate case of 2015, the City removed the tired rate structure. In 2016/17 the City intends to conduct a rate study to ensure that the tiered water rates are based on the actual cost of various services in providing water.

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 9 for the Water Conservation Ordinance 91-3, 91-13 and 2009-5. Table 8-2 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 8-2: Restrictions and Prohibitions on End Use

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 V Mandatory Water Conservation. In a Phase V 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 10 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. 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 8-3 illustrates the type of consumption reduction measures outlined in the City's water conservation program.

Table 8-3: Stages of Water Shortage Contingency Plan – Consumption Reduction Methods

Consumption Reduction Methods	Stage When Method Takes Effect	Projected Reduction
Education Program	Normal	Not Quantified
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%

Penalties and Charges

The Water Conservation Ordinance 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.

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.

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 $9.8 million annually from water sales. Based on average annual potable water sales of 6,174 acre-feet a 50 percent loss in water sales would reduce production to 3,087 acre-feet. Without the implementation of additional water rate increases or the reduction in capital or operating expenditures, the City's estimated loss in water revenue would total $4.9 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 Decrease
Water Sales	$3,024,370	Reduction in Groundwater Extraction Fees	$1,127,300
		Reduction in Energy Costs	$250,000
		Reduction in Incidental Costs	202,400
TOTAL	**$3,024,370**		**$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 $2.996 million shortfall, and a $3.024 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 $950,000 in a normal water supply year to $0 in Phases 4 and Phase 5. The reduction in capital projects still leaves a negative balance of $2.1 million. 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 4
	0%	**5%**	**10%**	**20%**	**30%**	**40%**	**50%**
Metered Water Sales	9,759,763	9,271,775	8,783,787	7,807,810	6,831,834	5,855,858	4,879,882
Water Operations Revenue	1,057,080	1,057,080	1,057,080	1,057,080	1,057,080	1,057,080	1,057,080
Misc. Revenue							
Operating Costs	(7,216,618)	(7,216,618)	(7,058,648)	(6,900,678)	(6,742,708)	(6,584,738)	(5,636,919)
Salaries/Benefits	(2,374,413)	(2,374,413)	(2,374,413)	(2,374,413)	(2,374,413)	(2,374,413)	(2,374,413)
Capital Projects	(950,000)	(950,000)	(950,000)	(950,000)	(950,000)	(950,000)	(950,000)
Ending Balance	**275,812**	**(212,176)**	**(542,194)**	**(1,360,201)**	**(2,178,207)**	**(2,996,213)**	**(3,024,370)**

Fiscal Impact of Drought, Conditions with Changes to Utility Operations

	Normal	Voluntary	Phase 1	Phase 2	Phase 3	Phase 4	Phase 4
	0%	**5%**	**10%**	**20%**	**30%**	**40%**	**50%**
Metered Water Sales	9,759,763	9,271,775	8,783,787	7,807,810	6,831,834	5,855,858	4,879,882
Water Operations Revenue	1,057,080	1,057,080	1,057,080	1,057,080	1,057,080	1,057,080	1,057,080
Misc. Revenue							
Operating Costs	(7,216,618)	(7,216,618)	(7,058,648)	(6,900,678)	(6,742,708)	(6,584,738)	(5,636,919)
Salaries/Benefits	(2,374,413)	(2,374,413)	(2,374,413)	(2,374,413)	(2,374,413)	(2,374,413)	(2,374,413)
Capital Projects	-	-	-	-	-	-	-
Ending Balance	**1,225,812**	**737,824**	**407,806**	**(410,201)**	**(1,228,207)**	**(2,046,213)**	**(2,074,370)**

Water Shortage Ordinance/Resolution and Water Use Monitoring Procedures

On March 27, 2015 the Office of Administrative Law (OAL) approved the State Water Board emergency regulation to support water conservation that was amended and readopted on March 17, 2015. The regulations became effective immediately and required implementation within 45 days. However, in mid-implementation on April 1 the Governor put into effect an Executive Order declaring a *Continued State of Emergency* to exist statewide due to the ongoing drought, depleted water supplies due to lack of rainfall, record low snowpack in the Sierra Nevada Mountains, decreased reservoir water levels, reduced flows in the state's rivers, and shrinking supplies in underground water basins.

The Governor's Executive Order contained several instructions for State Board implementation. Adopted by the State Board on May 5, 2015 and ratified by the OAL on May 18, 215, these provisions include:

1. Mandatory 25% reduction in potable urban water use;
2. Commercial, industrial and institutional potable water use reductions;
3. Prohibition on using potable water for irrigation of ornamental turf in street medians; and
4. Prohibition on using potable water for irrigation outside of new home construction without meeting a regulation soon to be established by the California Building Standards Commission and the Department of Housing and Community Development.

The State Board regulations require water suppliers to establish, if they have not already done so, rate structures and other pricing mechanisms geared at reducing water use. However, in light of the recent Fourth District Court of Appeal's Decision in Capistrano Taxpayer Association Inc. v. City of San Juan Capistrano (G048969) the City choose not to implement the drought Water Rate Structure. Therefore, the City Council implemented, by Resolution, Phase 3 of the City's 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. Attachment 11 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. This analysis can indicate the success of the public education portion of the water conservation program. 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.

Water Quality—Current and Projected Water Supply Impacts (acre-feet)

Water Source	Description of Condition	2015	2020	2025	2030	2035
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 #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	Well-head treatment	0	0	0	0	0
	Total	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.

Minimum Supply Next Three Years

The table below details the minimum water supply that Lakewood has available over the next three years: 2016, 2017, and 2018. 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 carryover or 1,929.38 acre-feet (today's total extraction rights of 11,361.38 acre-feet). Lakewood has the ability to carryover up to 50% of our pumping rights from year to year. 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 8-4: Minimum Supply Next Three Years

	2016	2017	2018
Available Water Supply	9,432	9,432	9,432

Chapter 9: 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 12 is the City of Lakewood Residential Water Audit Checklist. Requests for this type of service occurred frequently during the current drought. During this period of time the City promoted the service to meet conservation needs. Since 1990 the Department of Water Resources has conducted numerous water audits, but has not calculated the water savings associated with the surveys. The Department of Water Resources advertises this service on the City website and when customers call in to complain about a high water bill.

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.

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 annually for the program. However, in 2015 the City Council authorized an additional $10,000 for the program because it was in such high demand.

Water Conservation Rebates

	2011/12	2012/13	2013/14	2014/15	2015/16
Number of Turf Removal Projects	1	2	34	50	34
Number of Water Conservation Devices	58	17	29	4	29
Sub-surface	N/A	N/A	N/A	3	4
Program Cost	$1,227	$2,565	$6,838	$21,592	$36,000

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 1 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 800 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 6 months to complete the project. The water customer must commit to keeping the area turf free for five years to receive the rebate.

In 2014, the City expanded its water conservation rebate program to include subsurface irrigation systems. For residents that wish to keep their grass but eliminate water runoff subsurface irrigation systems can reduce landscape watering needs up to 25 percent. Putting a specialized type of drip line about six inches underground slowly applies small volumes of water right near the root zone of plants. This avoids the wasted water runoff and evaporation typical of spray irrigation methods. And it works with grass, shrubs and groundcover areas.

All rebates are awarded as a credit on the water bill.

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. 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. Residential users receive five units of water with the basic charge of service; multifamily and commercial customers do not.

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.

In December 2015, the City opted to allow the State of California's Model Water Efficient Landscape Ordinance (MWELO) to supersede Lakewood's 2009 Adopted Water Efficient Landscape Ordinance. 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.

Since Fiscal Year 2005, the development of approximately 50 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. Since the project started in 2005, 36 projects have fallen under the Landscape Ordinance.

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 2011 through Fiscal Year 2015. Total annual savings for the seven high efficiency washing machines in use is estimated at 566,981 gallons per year.

High Efficiency Clothes Washer Rebate Programs

	2011	*2012*	*2013*	*2014*	*2015*
$ per Rebate Start at:	$0	$80.00	$80.00	$160.00	$160.00
# of Rebates	0	1	1	3	2
Expenditures	Lakewood Has No Direct Expenditure for Program				
Water Savings (AF)	0	0.17	0.08	0.25	1.24

Public Information Programs

The Public Information Program demand management measure requires water purveyors to 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

	FY2011	*FY2012*	*FY2013*	*FY2014*	*FY2015*
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	~$14,500	~$14,500	~$14,500	~$14,500	~$20,000

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 500 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. The final phase, Phase 3 was completed in 2014 and the entire project now encompasses 25 acres.

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. Location of the publication on the City website is advertised to all residential and business water customers via their utility bill. See Attachment 14. *Lakewood Briefs*, the City's

water utility bill stuffer highlighted water conservation in four issues (Attachment 15). In addition to routine mailings, the City communicated the water conservation message to the community through one direct mailing (Attachment 16).

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 17. 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 18.

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

	2011	*2012*	*2013*	*2014*	*2015*
Grades 1st -6th	900	1,000	1,000	1,100	1,100
Expenditures	$1,200	$1,200	$1,200	$800	$1,563

Since 1990 over 22,850 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.

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 19 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 $1.70 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 676 high efficiency clothes washers over the five year span thus savings 23.33 acre-feet per year.

SoCal Water$mart Device Rebates for 2015

AGENCY DEVICE	DEVICE COUNT	APP COUNT	MET $	AGENCY $	TOTAL $	VENDOR FEE	AF YEAR SAVINGS	AF LIFE SAVINGS
Lakewood, City of	36	7	$6,805.00	$0	$6,805.00	98.9	1.83	29.63
HETF	2	1	$200.00	$0	$200.00	23.9	0.05	0.98
Ice-Making Machine	1	1	$1,000.00	$0	$1,000.00	12.5	0.15	1.54
RES Premium HET (Melded Rate)	29	1	$4,205.00	$0	$4,205.00	12.5	1.08	21.68
Soil Moisture Sensor System	1	1	$0	$0	$0	12.5	0.03	0.26
WBIC	3	3	$1,400.00	$0	$1,400.00	37.5	0.52	5.16
Total	36	7	$6,805.00	$0	$6,805.00	98.9	1.83	29.63

Wholesale Agency Programs

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

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.

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.

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 9 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

	2011	*2012*	*2013*	*2014*	*2015*
Waste Ordinance in Effect	YES	YES	YES	YES	YES
# of Water Waste Complaints	Not Determined	Not Determined	Not Determined	Not Determined	285
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 20); 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.

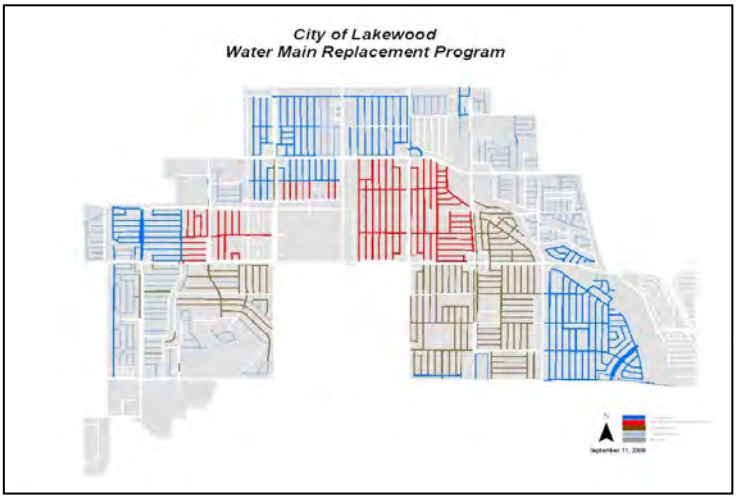
Demand Management Measures Not Implemented

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 327 acre-feet in FY2015 or 6 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, 163.5 acre-feet of unaccounted water would be saved annually.

Groundwater extraction assessment for the Fiscal Year 2015 was $283 per acre-foot. The energy cost for groundwater production was $77.41 per acre-foot; totaling $360 per acre-foot. The cost of implementing a water audit program is estimated at $593 an acre-foot, which indicates the program, is not cost effective to implement.

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 25 years 45 miles of mains have been replaced.

Completed Urban Water Management Plan Checklist

Urban Water Management Plan Checklist, Organized by Subject

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location *(Optional Column for Agency Use)*
10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	Section 2.1	
10620(d)(2)	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.	Plan Preparation	Section 2.5.2	
10642	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.	Plan Preparation	Section 2.5.2	
10631(a)	Describe the water supplier service area.	System Description	Section 3.1	
10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3.3	
10631(a)	Provide population projections for 2020, 2025, 2030, and 2035.	System Description	Section 3.4	

10631(a)	Describe other demographic factors affecting the supplier's water management planning.	System Description	Section 3.4	
10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Sections 3.4 and 5.4	
10631(e)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.2	
10631(e)(3)(A)	Report the distribution system water loss for the most recent 12-month period available.	System Water Use	Section 4.3	
10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 4.5	
10608.20(b)	Retail suppliers shall adopt a 2020 water use target using one of four methods.	Baselines and Targets	Section 5.7 and App E	
10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	Baselines and Targets	Chapter 5 and App E	
10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 5.7.2	
10608.24(a)	Retail suppliers shall meet their interim target by December 31, 2015.	Baselines and Targets	Section 5.8 and App E	

10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	Section 5.8.2	
10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	Section 5.1	
10608.40	Retail suppliers shall report on their progress in meeting their water use targets. The data shall be reported using a standardized form.	Baselines and Targets	Section 5.8 and App E	
10631(b)	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, 2030, and 2035.	System Supplies	Chapter 6	
10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.2	
10631(b)(1)	Indicate whether a groundwater management plan has 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.	System Supplies	Section 6.2.2	
10631(b)(2)	Describe the groundwater basin.	System Supplies	Section 6.2.1	
10631(b)(2)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Section 6.2.2	
10631(b)(2)	For unadjudicated basins, indicate whether or not the department has identified the basin as	System Supplies	Section 6.2.3	

	overdrafted, or projected to become overdrafted. Describe efforts by the supplier to eliminate the long-term overdraft condition.			
10631(b)(3)	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	System Supplies	Section 6.2.4	
10631(b)(4)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Sections 6.2 and 6.9	
10631(d)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System Supplies	Section 6.7	
10631(g)	Describe the expected future 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.	System Supplies	Section 6.8	
10631(h)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.6	
10631(j)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) – if any - with water use projections from that source.	System Supplies	Section 2.5.1	
10631(j)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	Section 2.5.1	

10633	For wastewater and recycled water, coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.1	
10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area. Include quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	System Supplies (Recycled Water)	Section 6.5.2	
10633(b)	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.	System Supplies (Recycled Water)	Section 6.5.2.2	
10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.3 and 6.5.4	
10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.5.4	
10633(e)	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	System Supplies (Recycled Water)	Section 6.5.4	
10633(f)	Describe the actions 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.	System Supplies (Recycled Water)	Section 6.5.5	
10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.5	

10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Section 7.4	
10631(c)(1)	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage.	Water Supply Reliability Assessment	Section 7.1	
10631(c)(1)	Provide data for an average water year, a single dry water year, and multiple dry water years	Water Supply Reliability Assessment	Section 7.2	
10631(c)(2)	For any water source that may not be available at a consistent level of use, describe plans to supplement or replace that source.	Water Supply Reliability Assessment	Section 7.1	
10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	Section 7.1	
10635(a)	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.	Water Supply Reliability Assessment	Section 7.3	
10632(a) and 10632(a)(1)	Provide an urban water shortage contingency analysis that specifies stages of action and an outline of specific water supply conditions at each stage.	Water Shortage Contingency Planning	Section 8.1	
10632(a)(2)	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.	Water Shortage Contingency Planning	Section 8.9	

10632(a)(3)	Identify actions to be undertaken by the urban water supplier in case of a catastrophic interruption of water supplies.	Water Shortage Contingency Planning	Section 8.8	
10632(a)(4)	Identify mandatory prohibitions against specific water use practices during water shortages.	Water Shortage Contingency Planning	Section 8.2	
10632(a)(5)	Specify consumption reduction methods in the most restrictive stages.	Water Shortage Contingency Planning	Section 8.4	
10632(a)(6)	Indicated penalties or charges for excessive use, where applicable.	Water Shortage Contingency Planning	Section 8.3	
10632(a)(7)	Provide an analysis of the impacts of each of the actions and conditions in the water shortage contingency analysis on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts.	Water Shortage Contingency Planning	Section 8.6	
10632(a)(8)	Provide a draft water shortage contingency resolution or ordinance.	Water Shortage Contingency Planning	Section 8.7	
10632(a)(9)	Indicate a mechanism for determining actual reductions in water use pursuant to the water shortage contingency analysis.	Water Shortage Contingency Planning	Section 8.5	
10631(f)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Sections 9.2 and 9.3	
10631(f)(2)	Wholesale suppliers shall describe specific demand management measures listed in code,	Demand Management	Sections 9.1 and 9.3	

	their distribution system asset management program, and supplier assistance program.	Measures		
10631(i)	CUWCC members may submit their 2013-2014 CUWCC BMP annual reports in lieu of, or in addition to, describing the DMM implementation in their UWMPs. This option is only allowable if the supplier has been found to be in full compliance with the CUWCC MOU.	Demand Management Measures	Section 9.5	
10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets.	Plan Adoption, Submittal, and Implementation	Section 10.3	
10621(b)	Notify, at least 60 days prior to the public hearing, 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.	Plan Adoption, Submittal, and Implementation	Section 10.2.1	
10621(d)	Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.	Plan Adoption, Submittal, and Implementation	Sections 10.3.1 and 10.4	
10635(b)	Provide supporting documentation that Water Shortage Contingency 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 the plan to DWR.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	
10642	Provide supporting documentation that the urban water supplier made the plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan.	Plan Adoption, Submittal, and Implementation	Sections 10.2.2, 10.3, and 10.5	
10642	The water supplier is to provide the time and place	Plan Adoption, Submittal, and	Sections 10.2.1	

	of the hearing to any city or county within which the supplier provides water.	Implementation		
10642	Provide supporting documentation that the plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 10.3.1	
10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 10.4.3	
10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	
10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Sections 10.4.1 and 10.4.2	
10645	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5	

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LAKEWOOD WATER WISE REBATES

Turf Removal Rebate Check List

Your Pre-Application for the City of Lakewood Turf Removal Program has been approved. Project completion is required within 6 months of receipt of the pre-application approval. Please use this checklist to verify completion of all the required steps to obtain your rebate.

- ❑ Complete the Rebate Request Form.
  - ❑ Record the REBATE NUMBER on the Rebate Request Form.
  - ❑ Verify the square footage of the project area.
  - ❑ Indicate the type of watering system (if any) installed. Reminder: hand watering, drip irrigation and micro sprinklers are the only method of watering allowed in a turf removal project area.
  - ❑ Indicate whether or not the project was installed as originally submitted. If changes in the original landscape plan occurred, see below for additional directions.
  - ❑ Sign and date the application.

- ❑ Include copy of the completed plumbing permit, if the project included changes, additions, alterations, repairs, or replacement of a sprinkler control valve.

  The project is not complete until the plumbing work is inspected by the Lakewood Building and Safety Department. You can call the Lakewood Building and Safety Department at 562.866.9771 extension 2350 to schedule an inspection of your sprinkler control valve. (This inspection is in addition to the inspection by the Lakewood Department of Water Resources.)

- ❑ Include copy of the completed electrical permit, if the project included changes, additions, alterations, repairs, or replacement of a circuit for the time clock for your landscape sprinkler system.

  The project is not complete until the plumbing work is inspected by the Lakewood Building and Safety Department. You can call the Lakewood Building and Safety Department at 562.866.9771 extension 2350 to schedule an inspection of your electrical work. (This inspection is in addition to the inspection by the Lakewood Department of Water Resources.)

- ❑ Submit 4-5 photographs of the project area with the rebate request form.

- ❑ Mail to:
  CITY OF LAKEWOOD DEPARTMENT OF WATER RESOURCES
  WATER CONSERVATION TURF REMOVAL REBATE PROGRAM
  5050 Clark Avenue
  Lakewood, CA 90712

Did you change your original Landscape Plan?
The City needs to know about any changes in plant type, ground cover and/or irrigation. Please include the following, if any changes to the approved landscape plan occurred during installation:

- ❑ Landscape plan indicating the changes from the original plan. A copy of your original drawing is included in this packet. You can make revisions on this drawing or submit a new one.
- ❑ Revised plant list.
- ❑ Revised irrigation installation location and type.
- ❑ Revised list of ground covers and weed barrier.

One more thing!
This packet includes an application and device list for Lakewood's Water Conservation Device Program. If your project included installation of any of the devices on the approved device list you can submit a device rebate application and the original receipts (or invoice if a contractor purchased for you) with the Turf Removal Rebate Request form.

Please follow these simple steps:

- ❑ Check the Approved Device List included in this packet of information to verify device rebate eligibility.
- ❑ Complete the Water Conservation Device Rebate Application, including the manufacturer and model number.
- ❑ Include the original receipt from the place of purchase or the contractor invoice for all devices. Exception: Residents applying for additional rebate(s) from Metropolitan Water District of Southern California (MWD) at www.bewaterwise.com can submit copies of the original receipt and the completed MWD application in lieu of the original receipt.
- ❑ Include the Water Conservation Device Application and receipts with the completed Turf Removal Rebate Request Form and packet.

Want to Pocket Some Additional Savings? Buy it in Lakewood!
You can receive additional discounts if you Shop Lakewood!

Lakewood water customers can receive additional savings when they purchase approved water saving devices in Lakewood! Just visit the Shop Lakewood website www.ShopLakewood.org, print the Lakewood Department of Water Resources coupon and include it with the device rebate application and original receipt. An additional $2.50 credit will be applied to your water bill for the purchase of devices priced between $25.00 and $49.99, and $5.00 credit for an eligible purchase totaling $50.00 or more (before sales tax).

Also enclosed in this packet is a certificate for additional discounts at Lakewood retailers. See the certificate for discount details.

LAKEWOOD WATERWISE REBATES

Turf Removal Rebate Program Request Form

Rebate Reservation Number (See Pre-Application Approval Email/Letter): _____
Water Customer Name: _____
Lakewood Water Customer Account Number: _____
Daytime Telephone Number: _____
Email Address: _____
Property Street Address: _____
Lakewood, CA Zip Code: ❑ 90712 ❑ 90713 ❑ 90714

Indicate the Location & Actual Size of Turf Removal Project (Check all boxes that apply and indicate area in square feet.):

❑ Front Yard	Actual Square Footage: _____ sq. ft.
❑ Backyard	Actual Square Footage: _____ sq. ft.
❑ Left Side Yard (Facing House)	Actual Square Footage: _____ sq. ft.
❑ Right Side Yard (Facing House)	Actual Square Footage: _____ sq. ft.
❑ Parkway	Actual Square Footage: _____ sq. ft.

TOTAL SQUARE FEET OF TURF REMOVED:_____ sq. ft.

TOTAL REBATE REQUEST (Total square feet x $1.00):$_____*

*Rebate Calculation (Though the project area can be greater than 800 square feet, the Total Rebate Area must be between 40 and 800 square feet.)

Indicate the type of irrigation used in project area (Check all that apply.):

❑ Automatic In Ground Sprinklers	Sprinkler Heads Make & Model: _____ Sprinkler Head Output: _____ gallons per minute Controller Make & Model: _____ Moisture Sensor Make & Model: _____
❑ Automatic Drip Irrigation	Drip Irrigation Manufacturer: _____ Controller Make & Model: _____ Moisture Sensor Make & Model: _____
❑ Manual In Ground Sprinklers	Sprinkler Heads Make & Model: _____ Sprinkler Head Output: _____ gallons per minute
❑ Manual Drip Irrigation	Drip Irrigation Manufacturer: _____
❑ Manual Sprinkler	
❑ Hand Water	
❑ No Irrigation Required	
❑ Other _____	

Was the landscape installed as originally submitted with the Turf Removal Rebate Pre-Application? ❑ Yes ❑ No

Please submit the following with this Turf Removal Rebate Program Request Form:

- ❑ Drawing of the finished landscape project indicating the project area dimensions, and plant, irrigation and groundcover locations.
- ❑ Final plant list.
- ❑ Final ground cover and weed barrier list.
- ❑ Copy of the closed permit(s) for those projects requiring electrical or plumbing permits.
- ❑ Pictures of the completed project area.

Disclaimer

The City of Lakewood makes no representation or warranty relating to contracted services or products that may be installed in converted area, including any hazardous substances that may be contained in the product. Removal of turf and installation of water efficient devices does not guarantee reduced water use. This application is for a rebate only.

By participating in the program, you waive and release the City of Lakewood from any and all claims and causes of action arising out of the removal of turf and/or the purchase, installation or use of devices in connection with this Turf Removal Rebate Program. Any claim you may have based upon any defect or failure of performance of a contracted service or device purchased by you should be pursued with the contractor or manufacturer/distributor.

The City of Lakewood only enforces the terms and conditions of the Turf Removal Program. The applicant is responsible for complying with all applicable laws, codes, policies, covenants, conditions and restrictions that may apply. Quality and appearance of the converted area is the responsibility of the applicant. The applicant agrees to the following:

1. Maintain the converted area free of turf for no less than five (5) years or until such time that property ownership changes hands.
2. This is a one-time-per-address rebate. Future turf removal projects will not be eligible for another rebate.
3. This rebate has no cash value. The rebate is granted as a credit on water used through the participant's City of Lakewood water account.

By signing this application, the applicant agrees to comply with the program terms and conditions, as well as, all Federal, State and local codes, including covenants, conditions and restrictions, as applicable. The applicant has read, understands and agrees to the terms and conditions of the program as outlined and certifies that the information on the application is true and correct.

_____	_____	_____
Water Customer Signature	Print Water Customer Name	Date

Mail Completed Turf Rebate Request and Accompanying Information to:

CITY OF LAKEWOOD
DEPARTMENT OF WATER RESOURCES WATER CONSERVATION TURF REMOVAL REBATE PROGRAM
5050 Clark Avenue
Lakewood, CA 90712

FOR OFFICE USE ONLY	
DATE STAMP	
Approved/Denied	
Reason for Denial	

Revised June 4, 2012

LAKEWOOD WATERWISE REBATES

Lakewood Water Rebate Program - Approved Devices

SMALL DRIP/MICRO SPRINKLER KITS

Manufacturer	Kit Description	Model Number
DIG	Retrofit 4-Outlet Drip System and Accessories Kit	A450
DIG	Retrofit 6-Outlet Drip System and Accessories Kit	A650
DIG	Maverick 12-Outlet Drip System Kit	PC12100
DIG	Maverick 12-Outlet High Flow Drip Kit	PC14100
DIG	Patio Watering Kit	FM01AS (with Backflow Device)
DIG	Mist and Drip Retrofit Watering Kit	MD50
Rain Bird	Rain Bird DC-6 Drip Irrigation Retrofit Kit	DC-6
TORO	TORO Blue Stripe Drip Starter Kit	53724
TORO	TORO Blue Stripe Drip 1/4" Fitting and Emitter Kit	53790
Rain Bird	Rain Bird Riser to 8-Port Drip Manifold	CNV2XBIRD
DIG	Drip and Soaker Vegetable Watering Kit	ST100AS with Backflow Device
DIG	Drip and Soaker Vegetable Watering Kit	ST100

LARGE DRIP/MICRO SPRINKLER KITS

Manufacturer	Kit Description	Model Number
Claber	Claber Logica Drip Kit (Sears Stores 07143383000)	CLB90762
DIG	Adjustable Micro Sprayer Kit	R750
DIG	Micro Sprinkler Watering Kit	EF55AS
DIG	Micro Sprinkler Watering Kit	EF55AS (with Backflow Device)
DIG	Drip Watering Kit (with Backflow Device)	G77AS
DIG	Drip and Micro Sprayer Kit	GE200
DIG	Vacation Drip Watering Kit	FS50
Gardena	Gardena Micro-Drip System (Sears Stores 07143338000)	1402-U
Orbit	Drip Irrigation for Dummies (Sears Stores 07106941000)	67520
Orbit	Vegetable Garden Soaker Kit	67527
Rain Bird	Rain Bird Patio Plant Watering Kit	PATIO-KIT
Rain Bird	Rain Bird Landscape Drip Watering Kit	LNDSW-KIT
Rain Bird	Rain Bird Gardener's Drip Kit	GROWER-KIT
Rain Bird	Rain Bird Drip Emitter Conversion Kit	CNV182EMT
Rain Bird	Rain Bird Bubbler Conversion Kit	CVN182BUB
TORO	TORO Blue Stripe Drip 1/2" Emitter Kit	53619

Buy eligible irrigation devices in Lakewood & additional credit on your water bill.

ROTOR NOZZLES

Manufacturer	Model Name	Model Number
Hunter	MP Rotator	MP1000210
Hunter	MP Rotator	MP1000360
Hunter	MP Rotator	MP1000HT1170
Hunter	MP Rotator	MP1000HT1440
Hunter	MP Rotator	MP1000HT360
Hunter	MP Rotator	MP1000HT630
Hunter	MP Rotator	MP1000HT90
Hunter	MP Rotator	MP1000HT900
Hunter	MP Rotator	MP10090
Hunter	MP Rotator	MP2000210
	MP Rotator	MP2000360
Hunter	MP Rotator	MP200090
Hunter	MP Rotator	MP2000HT210
Hunter	MP Rotator	MP2000HT360
Hunter	MP Rotator	MP2000HT90
Hunter	MP Rotator	MP3000210
Hunter	MP Rotator	MP3000360
Hunter	MP Rotator	MP3000HT210
Hunter	MP Rotator	MP3000HT360
Hunter	MP Rotator	MP3000HT90
Hunter	MP Rotator	MPCORNER
Hunter	MP Rotator	MPCORNERHT
Hunter	MP Rotator	MPLCS515
Hunter	MP Rotator	MPLCS516
Hunter	MP Rotator	MPLCS517
Hunter	MP Rotator	MPLCS518
Hunter	MP Rotator	MPLCSHT515
Hunter	MP Rotator	MPLCSHT516
Hunter	MP Rotator	MPLCSHT517
Hunter	MP Rotator	MPLCSHT518
Hunter	MP Rotator	MPRCS515
Hunter	MP Rotator	MPRCS516
Hunter	MP Rotator	MPRCS517
Hunter	MP Rotator	MPRCS518
Hunter	MP Rotator	MPRCSHT515
Hunter	MP Rotator	MPRCSHT516
Hunter	MP Rotator	MPRCSHT517
Hunter	MP Rotator	MPRCSHT518
Hunter	MP Rotator	MPSS530
Hunter	MP Rotator	MPSS531

Hunter	MP Rotator	MPSS532
Hunter	MP Rotator	MPSS533
Hunter	MP Rotator	MPSSHT530
Hunter	MP Rotator	MPSSHT531
Hunter	MP Rotator	MPSSHT532
Hunter	MP Rotator	MPSSHT533
Orbit	Eco-Stream Rotator Head	ES1000A
Orbit	Eco-Stream Rotator Head	ES1000F
Orbit	Eco-Stream Rotator Head	ES2000A
Orbit	Eco-Stream Rotator Head	ES2000F
Rain Bird	Rotary Nozzle	12SAF
Rain Bird	Rotary Nozzle	12SAH
Rain Bird	Rotary Nozzle	12SAQ
Rain Bird	Rotary Nozzle	22SAF
Rain Bird	Rotary Nozzle	22SAH
Rain Bird	Rotary Nozzle	22SAQ
Rain Bird	Rotary Nozzle	R13-18F
Rain Bird	Rotary Nozzle	R13-18H
Rain Bird	Rotary Nozzle	R13-18Q
Rain Bird	Rotary Nozzle	R13-18T
Rain Bird	Rotary Nozzle	R13-18TQ
Rain Bird	Rotary Nozzle	R17-24F
Rain Bird	Rotary Nozzle	R17-24H
Rain Bird	Rotary Nozzle	R17-24Q
Rain Bird	Rotary Nozzle	R17-24T
Rain Bird	Rotary Nozzle	R17-24TQ
Rain Bird	Rotary Nozzle	R17-24TT
TORO	Precision	O-T-5-60
TORO	Precision	O-T-5-Q
TORO	Precision	O-T-5-T
TORO	Precision	O-T-5-150
TORO	Precision	O-T-5-H
TORO	Precision	O-T-5-210
TORO	Precision	O-T-5-TT
TORO	Precision	O-T-5-TQ
TORO	Precision	O-T-5-F
TORO	Precision	O-5-60
TORO	Precision	O-5-Q
TORO	Precision	O-5-T
TORO	Precision	O-5-150
TORO	Precision	O-5-H
TORO	Precision	O-5-210
TORO	Precision	O-5-TT

TORO	Precision	O-5-TQ
TORO	Precision	O-5-F
TORO	Precision	O-T-8-60
TORO	Precision	O-T-8-Q
TORO	Precision	O-T-8-T
TORO	Precision	O-T-8-150
TORO	Precision	O-T-8-H
TORO	Precision	O-T-8-210
TORO	Precision	O-T-8-TT
TORO	Precision	O-T-8-TQ
TORO	Precision	O-T-8-F
TORO	Precision	O-8-60
TORO	Precision	O-8-Q
TORO	Precision	O-8-T
TORO	Precision	O-8-150
TORO	Precision	O-8-H
TORO	Precision	O-8-210
TORO	Precision	O-8-TT
TORO	Precision	O-8-TQ
TORO	Precision	O-8-F
TORO	Precision	O-T-10-60
TORO	Precision	O-T-10-Q
TORO	Precision	O-T-10-T
TORO	Precision	O-T-10-150
TORO	Precision	O-T-10-H
TORO	Precision	O-T-10-210
TORO	Precision	O-T-10-TT
TORO	Precision	O-T-10-TQ
TORO	Precision	O-T-10-F
TORO	Precision	O-10-60
TORO	Precision	O-10-Q
TORO	Precision	O-10-T
TORO	Precision	O-10-150
TORO	Precision	O-10-H
TORO	Precision	O-10-210
TORO	Precision	O-10-TT
TORO	Precision	O-10-TQ
TORO	Precision	O-10-F
TORO	Precision	O-T-12-60
TORO	Precision	O-T-12-Q
TORO	Precision	O-T-12-T
TORO	Precision	O-T-12-150
TORO	Precision	O-T-12-H

TORO	Precision	O-T-12-210
TORO	Precision	O-T-12-TT
TORO	Precision	O-T-12-TQ
TORO	Precision	O-T-12-F
TORO	Precision	O-12-60
TORO	Precision	O-12-Q
TORO	Precision	O-12-T
TORO	Precision	O-12-150
TORO	Precision	O-12-H
TORO	Precision	O-12-210
TORO	Precision	O-12-TT
TORO	Precision	O-12-TQ
TORO	Precision	O-12-F
TORO	Precision	O-T-15-60
TORO	Precision	O-T-15-Q
TORO	Precision	O-T-15-T
TORO	Precision	O-T-15-150
TORO	Precision	O-T-15-H
TORO	Precision	O-T-15-210
TORO	Precision	O-T-15-TT
TORO	Precision	O-T-15-TQ
TORO	Precision	O-T-15-F
TORO	Precision	O-15-60
TORO	Precision	O-15-Q
TORO	Precision	O-15-T
TORO	Precision	O-15-150
TORO	Precision	O-15-H
TORO	Precision	O-15-210
TORO	Precision	O-15-TT
TORO	Precision	O-15-TQ
TORO	Precision	O-15-F
TORO	Precision	O-T-4X9-RCS
TORO	Precision	O-T-4X9-LCS
TORO	Precision	O-T-4X18-SST
TORO	Precision	O-T-4X15-RCS
TORO	Precision	O-T-4X15-LCS
TORO	Precision	O-T-4X30-SST
TORO	Precision	O-4X9-RCS
TORO	Precision	O-4X9-LCS
TORO	Precision	O-4X18-SST
TORO	Precision	O-4X15-RCS
TORO	Precision	O-4X15-LCS
TORO	Precision	O-4X30-SST

RAIN SENSORS

Manufacturer	Model Name	Model Number
Hunter	Rain Clik	Rain-Clik
Rain Bird	Rain check	Rain check
Rain Bird	WR2 Wireless Rain or Rain/Freeze Sensor	WR2RFC Wireless Rain/Freese Sensor Combo110.40
Rain Bird	WR2 Wireless Rain/Freeze Sensor	WR2RC Wireless Rain Sensor Combo
Rain Bird	RSD Rain Sensor	RSD-CEx Rain Sensor- No Bracket
Rain Bird	RSD Rain Sensor	RSD-BEx Rain Sensor- With Bracket
Irritrol	Irritrol Rain Sensor	RS1000
Irritrol	Irritrol Rain Sensor	RFS1000
Irritrol	Irritrol Rain Sensor	RS500
TORO	TORO 53769 Sprinkler System Wired Rain Sensor	53769
TORO	TORO Wireless Rain Sensor	53770
TORO	TORO Wired RainSensor with Freeze Detection	53853
ORBIT	Rain/Freeze Sensor	57069
Melnor	Melnor Automatic Rain Sensor (3290)	3290

MOISTURE SENSORS

Manufacturer	Model Name	Model Number
Gardena	Gardena Moisture Sensor (Sears Stores 07143311000)	1188-U
Acclima	Acclima Digital TDT Soil Moisture Sensor	ACC-SEN-TDT
Acclima	Acclaima SCX Soil Moisture Sensor & Irrigation Override Controller	MS-SCX-01
Rain Bird	SMRT-Y Soil Moisture Sensor Kit	SMRT-Y
Melnor	Melnor Wireless Moisture Sensor	33000V

CONTROLLER EQUIPPED WITH MOISTURE SENSOR

Manufacturer	Model Name	Model Number
Acclima	Acclima SC6 Plus Outdoor Controller & Digital TDT Moisture Sensor	ACC-SYS-SC6P
Acclima	Acclima SC6 Plus Outdoor Controller & Digital TDT Moisture Sensor	ACC-SYS-SC6
Acclima	Acclima Digital TDT Moisture Sensor SC12	ACC-SYS-SC12
Acclima	Acclima Digital TDT Moisture Sensor SC12	ACC-SYS-SC12P
Rain Bird	ESP SMT Series Smart Timer 4 Station Indoor Smart Timer	ESP-SMT4i
Rain Bird	ESP SMT4 Series Smart Timer 4 Station Outdoor Smart Timer	ESP-SMT4

HOSE END TIMER

Manufacturer	Model Name	Model Number
TORO	TORO Blue Stripte Drip Battery-Operated Hose-End Timer	53746
DIG	DIG Corp Watering Hose Thread Timer with Push Buttons	9001 EZ
DIG	DIG Corp No. 9001DB with LCD Display Battery Operated Hose Thread Timer	9001DB
DIC	DIG Corp One Touch Programmable Sprinkler Timer	2006-I
DIG	3/4 in. Hose Thread Automatic Sprinkler Timer, Programmable, In-Line	7001

Ray Padula Time It!	Ray Padula Time It! Deluxe Electronic Hose Timer	RPETI1
Ray Padula Time It!	Ray Padula Time It! Duo Dual Outlet Manual Hose Timer	RPETD2
Orbit	Orbit 2-Dial Digital Timer	62155
Orbit	Orbit Single Dial Timer	62024
Orbit	Orbit Digital 2-Outlet HT Timer	27133
Orbit	Orbit 1-Dial 1-Outlet Digital Timer	27729
Orbit	Orbit Watering System	27752
Vigoro	Vigoro 2-Zone Water Timer	3100V
Vigoro	Vigoro Automatic Yard Watering System	62032
Melnor	Melnor ual Hose End Water Timer (3100)	3100
Ace	Ace One Cycle Digital Water Timer	
Ace	Ace Deluxe Digital Water Timer	
Raindrip	Raindrip Analog Electronic Water Timer	R672CT
Gardena	Gardena Water Computer Profi (Sears Store 07143333000)	1814-U

CONTROLLERS THAT CAN ADAPT TO RAINOR MOISTURE SENSOR

Manufacturer	Model Name	Model Number
TORO	ECXTRA 8 Zone Sprinkler Timer	53767
TORO	ECXTRA 8 Zone Timer with Scheduling Advisor	53795
TORO	ECXTRA 6 Zone Sprinkler Timer	53794
Rain Bird	ESP-8LX Modular Outdoor Timer	ESP-8LX
Rain Bird	ET Manager	ET
Rain Bird	Upgrade Kit Converts ESP Modular to Smart Timer	ESP-SMT-UPG
Alex-Tronix	Alex-Tronix USM Universal Smart Module	
Irritrol	Rain Dial to Smart Controller	SD-600MOD
Irritrol	Rain Dial to Smart Controller	SD900MOD
Irritrol	Rain Dial to Smart Controller	SD1200MOD

WEATHER BASED CONTROLLERS

Manufacturer	Model Name	Model Number
Hunter	ICC	ICC-800PL-SSYNC (PL=Plastic)
Hunter	Pro-C Conventional	PCC-600-SSYNC
Hunter	Pro-C Conventional	PCC-600i-SSYNC
Hunter	Pro-C Conventional	PCC-900-SSYNC
Hunter	Pro-C Conventional	PCC-900i-SSYNC
Hunter	Pro-C Conventional	PCC-1200-SSYNC
Hunter	Pro-C Conventional	PCC-1200i-SSYNC
Hunter	Pro-C Conventional	PCC-1500-SSYNC
Hunter	Pro-C Conventional	PCC-1500i-SSYNC
Hunter	Pro-C	PC-300-SSYNC
Hunter	Pro-C	PC-300i-SSYNC
Irritrol	Smart Dial	SD600-EXT

Irritrol	Smart Dial	SD900-EXT
Irritrol	Smart Dial	SD1200-EXT
Irritrol	Smart Dial	SD2400-EXT
Irritrol	Smart Dial	SD600-INT
Irritrol	Smart Dial	SD900-INT
Irritrol	Smart Dial	SD1200-INT
Rain Bird		ESP-SMT
Rain Bird		ESP-LX with ET Manager Cartridge
TORO	Intelli-Sense	TIS-612
TORO	Intelli-Sense	TIS-06-ID
TORO	Intelli-Sense	TIS-06-OD
TORO	Intelli-Sense	TIS-09-ID
TORO	Intelli-Sense	TIS-09-OD
TORO	Intelli-Sense	TIS-12-ID
TORO	Intelli-Sense	TIS-12-OD
TORO	Intelli-Sense	TIS-240
TORO	Intelli-Sense	TIS-24-ID
TORO	Intelli-Sense	TIS-24-OD
WaterOptimizer		300
Weathermatic		SL800

LAKEWOOD WATER WISE REBATES

FAQs for Device Rebate Incentive Program

1. **When can I submit my application for a rebate?**

   The water conservation devices must be installed prior to submitting the rebate application, so you can start purchasing and installing the eligible devices now.

2. **How long will it take to get my rebate approved and receive my rebate on my water bill?**

   The Lakewood Department of Water Resources staff will inspect the installation of your device(s) prior to issuing the rebate credit on your water bill. It may take 2 to 3 weeks before the rebate is applied to your bill. You will receive a notice via email or U.S. mail upon approval of your rebate. The rebate will appear on the water bill following rebate approval.

3. **I already submitted my water conservation device rebate from the Metropolitan Water District of Southern California (MWD). Can I still get a rebate from the Lakewood Program?**

   Yes, if you purchased the eligible water conservation devices on or after November 10, 2010. Complete the City of Lakewood rebate application and submit it with a copy of your MWD rebate application and receipt(s).

4. **How did you pick the dollar amounts for the rebates?**

   The rebate amounts were based on the typical cost for each type of device. While none of the rebates will pay for the purchase of a water conservation device, it does allow you to recoup some of the cost. Remember, these devices are designed to save you water, which if used correctly should also save you additional money on your water bill for years to come.

   City of Lakewood rebates fall into two categories: devices and turf projects. Device rebates run $5 to $50 towards the purchase cost of water saving irrigation devices like low-waste "rotor" sprinkler heads, drip irrigation kits and hose timers. Additional rebates are available for irrigation timers/controllers and moisture sensors. The rebates are worth approximately 20% of the device cost.

   Rebates for devices and turf removal could add up to $915 per household. Roughly calculated, over a year's time a typical Lakewood home might save anywhere from $40 to $65 a year on their water bills.

   The program offers up to $800 for the removal of thirsty grass landscaping and the cost of re-landscaping, irrigation or installation of water permeable surfaces. This can be done in conjunction with a device rebate.

5. **I purchased conservation devices before the Lakewood program started. Why can't I get a rebate from the City of Lakewood?**

   The Lakewood City Council approved the Water Conservation Device Rebate Program at its meeting in November 2010. Unfortunately, the program cannot start before that date. You might however be eligible for a rebate from the Metropolitan Water District of Southern California (MWD). Please check www.bewaterwise.com to see if your water conserving devices are eligible for a rebate from MWD.

6. **I live in the part of Lakewood served by the Golden State Water Company. Why can't I get a rebate from the City of Lakewood?**

   Golden State Water Company funds rebates for high efficiency washing machines, rotor nozzles, weather based timers and turf removal at www.bewaterwise.com. Golden State Water Company customers are not eligible for the City of Lakewood's water conservation rebate program, because it is funded entirely through the revenue the City receives from its water customers.

7. **Why can't businesses, apartment buildings or multi-family units like duplexes get rebates?**

   Commercial and industrial businesses and multiple family dwelling units are eligible for a variety of rebates through the Metropolitan Water District of Southern California at www.bewaterwise.com, many of which are not available to the single family homeowner. These rebates can have a positive impact on the businesses' bottom line. The City decided to focus its water conservation device rebates on single family residential customers to reach the largest group of water users. Over 90 percent of Lakewood's water users are single family accounts. In addition, outside water use accounts for up to 70 percent of the water used by single family homes.

8. **Is there an application and step by step guide that I can download?**

   The application, approved device list and instructions for completing the rebate application are enclosed in this packet. Log on to www.lakewoodcity.org/waterrebates for further information.

9. **I'm planning my projects, but they won't be done for a while. What's the deadline to apply for a rebate?**

   There is no deadline for the rebate program, but rebates will cease when the existing funds are expended. The City has budgeted $25,000 for the fiscal year ending on June 30, 2013, but no decision has been made regarding future year allocations.

10. **I need help. Is there a list of affordable and reputable plumbers, nurseries or landscapers that can help me?**

    The City cannot recommend businesses. Referrals from friends and family members may be a good place to start or browse the Shop Lakewood website to look for potential service providers. Take the time to interview a potential contractor before you ask for an estimate. Visit California Consumer Affairs Contractors State License Board website http://www.cslb.ca.gov/Consumers for advice on selecting a contractor. You can verify the status of a contractor's license and learn what to look for in a binding contract.

    Also, make sure the contractor provides pictures and references from previous clients. Take the time to call the references to ask questions about the workmanship, cost and timeliness of the contractor.

11. **I need to plan my project. Who should I talk to?**

    The City cannot provide assistance with project planning. There are several websites that can provide assistance with project planning.

    There are two proven free resources for learning about doing a complete yard makeover. They are the Los Angeles County "Smart Gardener" program and the Water Replenishment District's (WRD) "Eco Gardener" workshop series. Both offer information online and workshops locally.

Los Angeles County offers more than three dozen beginning and advanced "Smart Gardener" workshops throughout the region. Call 888-CLEAN LA for additional information. They also have a complete page on instructional videos online.

The WRD eco-gardener workshops series cover the concepts of water efficient gardening and landscaping, irrigation basics, best horticultural practices, drought tolerant and native plants, and garden design concepts. Residents will get design tips, irrigation scheduling, maintenance tips and troubleshooting information for choosing appropriate plants and fertilizers. Call 562-275-4234 or call Marisol Carlos at mcarlos@wrd.org or go to www.ecogardener.org to sign up.

Please visit www.bewaterwise.com or www.lakewoodcity.org/waterrebates for a variety of websites dedicated to water conservation. If you have questions regarding the rebate program you can email the City at waterrebates@lakewoodcity.org or call the Lakewood Department of Water Resources at 562.866.9771, extension 2700.

If you have questions regarding permits for installation of new landscaping and/or irrigation please contact the Lakewood Community Development Department at 562.866.9771, extension 2300.

12. I heard you do field checks. What's that?

Some of the rebates require a site inspection. The inspection allows staff to verify the proper installation of the water conserving equipment. Lakewood Department of Water Resources staff will call to schedule an appointment to inspect if necessary.

13. Do I need a permit to install any of these water saving devices? What upgrades to my landscaping require a permit?

A plumbing permit is required when changing, adding, altering, repairing or replacing a sprinkler control valve; and an electrical permit is required when changing, adding, altering, repairing or replacing a power receptacle for a time clock for a landscape sprinkler system. A permit is not required when changing, adding, altering, repairing or replacing a sprinkler head.

14. Are there any classes I can take?

The City does not offer any water wise gardening classes at this time, but Los Angeles County and the Water Replenishment District of Southern California do. The City's website www.lakewoodcity.org/waterrebates provides links to these classes.

15. Is the retrofit of existing irrigation mandatory under the City's Water Conservation Ordinance?

No. The Lakewood City Council placed the community in a voluntary water conservation phase in 1991 and it remains at the voluntary stage. The City asks that our water customers voluntarily cut water use by 10 percent, and the community has complied. Since 2008 the city has reduced water use by 10 percent. However, statewide water supply issues can impact Lakewood and the mandate for a 20 percent per capita reduction in water use by 2020 looms in the future. The City implemented this program to help the community reach the 20 percent by 2020 goal.

16. How much can I really save? Is it really worth the effort?

Rebates for devices and turf removal could add up to $915 per household. Roughly calculated, over a year's time a typical Lakewood home might save anywhere from $40 to $65 a year on their water bills.

Water is a precious resource, and the supply to southern California is limited, so any savings will benefit the region, the state and your pocketbook. What you save depends on the type of landscape and irrigation changes you decide to make. The accurate placement of water on grass and shrubs will direct where it needs to go, and reduce the amount of watering time. Timers that automatically shut off when it rains or senses the moisture in the soil will reduce the number of times your irrigation runs.

17. Is there a website with photos and examples of plants and garden designs for how to turn a yard into a water wise garden?

Yes. Please visit www.h2ohouse.com, www.bewaterwise.com or www.lakewoodcity.org/waterrebates for sample plot plans and photos, and additional links to other resources on the internet.

18. How do I get an additional discount from Shop Lakewood?

It's easy. Eligible water saving devices purchased at a retail store in Lakewood are eligible for an additional discount by going to the Shop Lakewood website and clicking on the Lakewood Water Wise Rebate icon. Print the coupon and mail it with the water conservation device incentive rebate application and original receipt to the City. An additional $2.50 credit will be applied to your water bill for purchase of devices priced between $25.00 and $49.00, and $5.00 credit for a purchase totaling $50.00 or more (before sales tax).

LAKEWOOD WATER WISE REBATES

Water Conservation Device Rebate Program Application

Water Customer Name: _____

Lakewood Water Customer Account Number: _____

Daytime Telephone Number: _____

Email Address: _____

Property Address: _____
Lakewood, CA Zip Code: ❑ 90712 ❑ 90713 ❑ 90714

Property Owner (if different from Water Customer): _____
Property Owner Daytime Telephone Number (if different from Water Customer):_____

Location of Device Installation (check all that apply.):
❑ Front Yard
❑ Back Yard
❑ Side Yard Indicate Side Yard Location: ❑ Left Side (Facing House) ❑ Right Side (Facing House)

Type of Rebate (check all that apply.):
❑ Drip Irrigation/Micro Sprinkler Kit <$20.00 Make/Model: _____
❑ Drip Irrigation/Micro Sprinkler Kit ≥$20.00 Make/Model: _____
❑ Hose End Timer Make/Model: _____
❑ Rotor Nozzle Make/Model: _____
❑ Rain Sensor Make/Model: _____
❑ Irrigation Controller Equipped with Rain Sensor or Moisture Sensor Make/Model: _____
❑ Weather Based Irrigation Controller Make/Model: _____

Water Conservation Device	Number of Allowable Rebates	Number of Rebates Requested:	Rebate Amount per Unit:	TOTAL REBATE	Date of Purchase
Drip Irrigation/Micro Sprinkler Kit <$20.00	1	_____	$5.00	_____	_____
Drip Irrigation/Micro Sprinkler Kit ≥$20.00	1	_____	$10.00	_____	_____
Hose End Timer	1	_____	$5.00	_____	_____
Rotor Nozzle	7-25	_____	$2.00	_____	_____
Rain Sensor or Moisture Sensor	1	_____	$25.00	_____	_____
Irrigation Controller Equipped with Rain Sensor or Moisture Sensor	1	_____	$35.00	_____	_____
Weather Based Irrigation Controller	1	_____	$50.00	_____	_____
			GRAND TOTAL	_____	

Did you purchase your irrigation devices in Lakewood? Devices purchased in Lakewood totaling $25.00+ are eligible for additional savings! Visit www.ShopLakewood.org, print the Lakewood Department of Water Resources Coupon and attach it and the original receipt to this rebate application.

Product Disclaimer & Terms of Rebate Program

The City of Lakewood makes no representation or warranty relating to contracted services or products that may be installed, including any hazardous substances that may be contained in the product. Installation of water efficient devices does not guarantee reduced water use. This application is for a rebate only.

By participating in the program, you waive and release the City of Lakewood from any and all claims and causes of action arising out of the purchase, installation or use of devices in connection with this Water Conservation Device Rebate Program. Any claim you may have based upon any defect or failure of performance of a contracted service or device purchased by you should be pursued with the contractor or manufacturer/distributor.

The City of Lakewood only enforces the terms and conditions of the Water Conservation Device Rebate Program. The applicant is responsible for complying with all applicable laws, codes, policies, covenants, conditions and restrictions that may apply. This includes the City of Lakewood Water Conservation Ordinance.

By signing this application, the applicant agrees to comply with the program terms and conditions, as well as, all Federal, State and local codes, including covenants, conditions and restrictions, as applicable. The applicant has read, understands and agrees to the terms and conditions of the program as outlined and certifies that the information on the application is true and correct.

Water Customer

Signature	Print Name	Date
_____	_____	_____

Mail Completed Form and Original Receipts to:

Water Conservation Rebate Program
City of Lakewood
5050 Clark Avenue
Lakewood, CA 90712

FOR OFFICE USE ONLY	
DATE STAMP	
REBATE NUMBER	
INSPECTION DATE	
REBATE APPROVE OR DENIED	
SHOP LAKEWOOD COUPON	
TOTAL REBATE CREDIT EARNED	

Revised June 4, 2012

LAKEWOOD WATER WISE REBATES

Subsurface Irrigation Rebate Program

Irrigation systems provide many benefits to residents, such as convenience and even increased property value. When used properly, subsurface irrigation can reduce landscape water needs up to 25 percent!

Lakewood Department of Water Resources (DWR) offers rebates to customers that replace above ground spray irrigation with subsurface irrigation (pictured below is a Rain Bird subsurface dripline). Subsurface irrigation, not to be confused with surface drip irrigation, is designed to:

1. Be about 6 inches underground
2. Slowly apply small volumes of water at or near the root zone of plants
3. Be more efficient than above ground spray irrigation systems
4. Irrigate under turf grass or shrub and groundcover areas.

Please visit our website at www.lakewoodcity.org/waterrebates for more information on our drip irrigation rebate program or call (562) 866-9771 ext. 2700 for assistance.

Subsurface Irrigation Rebate Requirements

- ❑ Rebate amount: $0.50 per square foot (credit to appear on water bill)
  - ❑ Minimum Project Area: 40 square feet ($20)
  - ❑ Maximum Project Area: 800 square feet ($400)

- ❑ Water bill account must be and maintain in good standing at the time of application and until the completion of the project to receive rebate

- ❑ Project requires pre-application submittal: Complete Subsurface Irrigation Rebate Pre-Application. Projects already in progress are not eligible for subsurface irrigation rebate.

- ❑ **PRIOR** to final soil compaction/installation of the subsurface irrigation system, the DWR must be contacted at (562) 866-9771 ext. 2700 to conduct an on-sight inspection.

- ❑ **Project Completion Timeline:** Complete the subsurface irrigation system as approved by the DWR within 6 months of project acceptance. Failure to complete the project within the stated time will forfeit your pre-approved application.

- ❑ Credit on water bill after project verification: This rebate has no cash value. The rebate is granted as a credit on water used through the participant's City of Lakewood water account.

- ❑ Note: the Metropolitan Water District of Southern California does not offer its own additional rebate for subsurface irrigation systems.

LAKEWOOD WATER WISE REBATES

Subsurface Irrigation Rebate Pre-Application

Water Customer Name: _____

Lakewood Water Customer Account Number: _____

Daytime Telephone Number: _____

Email Address: _____

Property Address: _____

Lakewood, CA Zip Code: ❑ 90712 ❑ 90713 ❑ 90714

Property Owner (if different from Water Customer): _____

Property Owner Daytime Telephone Number (if different from Water Customer):_____

Location of Subsurface Device Installation (check all that apply.):

- ❑ Front Yard: _____sqft
- ❑ Back Yard: _____sqft
- ❑ Side Yard (Indicate Side Yard Location)
  - ❑ Left Side (Facing House): _____ sqft
  - ❑ Right Side (Facing House): _____ sqft

TOTAL sqft _____ x $0.50 = $_____ rebate

Did you purchase your irrigation devices in Lakewood? Devices purchased in Lakewood totaling $25.00+ are eligible for additional savings! Visit www.ShopLakewood.org, print the Lakewood Department of Water Resources Coupon and attach it and the original receipt to this rebate application.

LAKEWOOD

5050 Clark Avenue, Lakewood, CA 90712 ♦ 562.866.9771 extension 2700 ♦ www.lakewoodcity.org/waterrebates

Final Application
Subsurface Irrigation Rebate

Subsurface Irrigation Rebate Requirements

- ❑ Rebate amount: $0.50 per square foot (credit to appear on water bill)
  - ❑ Minimum Project Area: 40 square feet ($20)
  - ❑ Maximum Project Area: 800 square feet ($400)

- ❑ **PRIOR** to final soil compaction/installation of the subsurface irrigation system, the DWR must be contacted at (562) 866-9771 ext. 2700 to conduct an on-sight inspection.

Water Customer Name: _____

Lakewood Water Customer Account Number: _____

Daytime Telephone Number: _____

Email Address: _____

Property Address: _____

Lakewood, CA Zip Code: ❑ 90712 ❑ 90713 ❑ 90714

Property Owner (if different from Water Customer): _____

Property Owner Daytime Telephone Number (if different from Water Customer):_____

ON SITE INSPECTION – Location of Subsurface Device Installation (check all that apply.):

- ❑ Front Yard: _____sqft
- ❑ Back Yard: _____sqft
- ❑ Side Yard (Indicate Side Yard Location)
  - ❑ Left Side (Facing House): _____ sqft
  - ❑ Right Side (Facing House): _____ sqft

TOTAL sqft _____ x $0.50 = $_____ rebate

LAKEWOOD WATER WISE REBATES

Did you purchase your irrigation devices in Lakewood? Devices purchased in Lakewood totaling $25.00+ are eligible for additional savings! Visit www.ShopLakewood.org, print the Lakewood Department of Water Resources Coupon and attach it and the original receipt to this rebate application.

Product Disclaimer & Terms of Rebate Program

The City of Lakewood makes no representation or warranty relating to contracted services or products that may be installed, including any hazardous substances that may be contained in the product. Installation of water efficient devices does not guarantee reduced water use. This application is for a rebate only.

By participating in the program, you waive and release the City of Lakewood from any and all claims and causes of action arising out of the purchase, installation or use of devices in connection with this Water Conservation Device Rebate Program. Any claim you may have based upon any defect or failure of performance of a contracted service or device purchased by you should be pursued with the contractor or manufacturer/distributor.

The City of Lakewood only enforces the terms and conditions of the Water Conservation Device Rebate Program. The applicant is responsible for complying with all applicable laws, codes, policies, covenants, conditions and restrictions that may apply. This includes the City of Lakewood Water Conservation Ordinance.

By signing this application, the applicant agrees to comply with the program terms and conditions, as well as, all Federal, State and local codes, including covenants, conditions and restrictions, as applicable. The applicant has read, understands and agrees to the terms and conditions of the program as outlined and certifies that the information on the application is true and correct.

Water Customer

_____ _____ _____

Signature Print Name Date

Mail Completed Form and Original Receipts to:

Water Conservation Rebate Program
City of Lakewood
5050 Clark Avenue
Lakewood, CA 90712

FOR OFFICE USE ONLY	
DATE STAMP	
INSPECTION DATE	
APPROVE OR DENIED	
SHOP LAKEWOOD COUPON	
TOTAL REBATE CREDIT EARNED	

Revised April 28, 2015 TSS

LAKEWOOD

ATTACHMENT 2

FINAL

Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority

SUMMARY OF "BASELINE AND COMPLIANCE URBAN PER CAPITA WATER USE" DETERMINATION

June 2016

STETSON ENGINEERS INC.

861 Village Oaks Drive, Suite 100 ▪ Covina, California 91724
Phone: (626) 967-6202 ▪ FAX: (626) 331-7065 ▪ www.stetsonengineers.com

Northern California ▪ Southern California ▪ Arizona ▪ Colorado

BASELINE AND COMPLIANCE URBAN PER CAPITA WATER USE

California Water Code Section 10608.20(a)(1)

> *Each urban retail water supplier shall develop urban water use targets and an interim urban water use target by July 1, 2011. Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28, and may determine the targets on a fiscal year or calendar year basis.*

California Water Code Section 10608.28

> *(a) An urban retail water supplier may meet its urban water use target within its retail service area, or through mutual agreement, by any of the following:*
>
> *(1) Through an urban wholesale water supplier.*
>
> *(2) Through a regional agency authorized to plan and implement water conservation, including, but not limited to, an agency established under the Bay Area Water Supply and Conservation Agency Act (Division 31 (commencing with Section 81300)).*
>
> *(3) Through a regional water management group as defined in Section 10537.*
>
> *(4) By an integrated regional water management funding area.*
>
> *(5) By hydrologic region.*
>
> *(6) Through other appropriate geographic scales for which computation methods have been developed by the department.*
>
> *(b) A regional water management group, with the written consent of its member agencies, may undertake any or all planning, reporting, and implementation functions under this chapter for the member agencies that consent to those activities. Any data or reports shall provide information both for the regional water management group and separately for each consenting urban retail water supplier and urban wholesale water supplier.*

Introduction

According to California Water Code Sections 10608.20(a)(1) and 10608.28, urban retail water suppliers may plan, comply, and report on a regional basis, an individual basis or both. The California Department of Water Resources' (DWR) guidebook titled, "Methodologies for Calculating Baseline and Compliance Urban per Capita Water Use" includes "Methodology 9" which prescribes three options by which the regional alliance

compliance may be calculated. Each group of water suppliers agreeing among themselves to plan, comply, and report as a region is referred to in Methodology 9 as a "regional alliance."

Calculation of Regional Targets

Water suppliers in a regional alliance have three options to calculate the regional targets.

Option 1

This option preserves maximum flexibility at the water supplier level. Each retail water supplier in a regional alliance first calculates its individual target. The individual targets from each retail water supplier is then multiplied by each retail water supplier's population. The total is divided by the total population in the alliance to obtain the regional target. For the 2010 urban water management plans, retail water suppliers used their estimated population data to generate the regional targets. However, for compliance in 2015 and 2020, the population weighting of the individual targets must be based upon the compliance-year population data. Because 2010 U.S. Census data was not available until 2012, retail water suppliers were required to recalculate its individual population, baseline and targets in 2015. A modification in any individual target or a change in membership in a regional alliance will require a recalculation of the entire regional target.

Option 2

The second option for an alliance to calculate a regional target is to sum up the individual retail water supplier's gross water use and service area populations to develop regional gross water use and population. The alliance would then calculate regional base daily per capita use and choose one target method to calculate a regional target. This option requires all the members to use the same baseline period.

Option 3

A third option is to calculate regional gross water use or population directly for the entire regional alliance area. Regional base daily per capita use and a regional water use target would then be derived. Like Option 2, members of alliances using this option must use the same baseline period and the same target method. The regional target may not exceed 95 percent of the region's 5-year Base Daily Per Capita Water Use.

Results

The Gateway Regional Alliance has chosen Option 1 to estimate its Regional Target. The following tabulation summarizes the steps used with Option 1 and to calculate the Regional Target. As shown in the tabulation below, the "Regional Alliance Weighted Average 10-15 Year Baseline" is 128 GPCD. The "Regional Alliance Weighted Average 2020 Target" is 111 GPCD. The "Regional Alliance 2015 Interim Target" is based on the mid-point between the Weighted Average 10-15 Year Baseline (129 GPCD) and the Weighted Average 2020 Target (115 GPCD). The Regional Alliance 2015 Interim Target is 120 GPCD ((128 + 111) / 2).

Based on each of the member agencies' individual 2015 Actual water use, the "Regional Alliance 2015 Actual water use" is 102 GPCD. The 2015 Actual water use of 102 GPCD is less than the "Regional Alliance 2015 Interim Target" of 120 GPCD. Therefore, the Gateway Regional Alliance achieved its Targeted Reduction for 2015 and is in compliance with the 2015 Interim Target.

SB X7-7 RA1 - Weighted Baseline				
Participating Member Agency Name	10-15 year Baseline GPCD*	Average Population During 10-15 Year Baseline Period	(Baseline GPCD) X (Population)	Regional Alliance Weighted Average 10-15 Year Baseline GPCD
City of Downey	144	108,998	15,695,712	
City of Lakewood	107	58,241	6,231,787	
City of Long Beach	134	457,727	61,335,418	
City of Lynwood	100	63,227	6,322,700	
City of Norwalk	107	16,372	1,751,804	
City of Paramount	118	55,137	6,506,166	
City of Pico Rivera	121	40,513	4,902,073	
Pico Water District	150	22,598	3,389,700	
City of Santa Fe Springs	101	14,876	1,502,476	
City of Signal Hill	188	10,621	1,996,748	
City of South Gate	102	87,841	8,959,782	
City of Whittier	155	53,155	8,239,025	
Regional Alliance Total	1,527	989,306	126,833,391	**128**

**All participating agencies must submit individual SB X7-7 Tables, as applicable, showing the individual agency's calculations. These tables are: SB X7-7 Tables 0 through 6 , Table 7, any required supporting tables (as stated in SB X7-7 Table 7), and SB X7-7 Table 9, as applicable.These individual agency tables will be submitted with the individual or Regional Urban Water Management Plan.*

NOTES: The City of Bell Gardens, City of Bellflower, and City of Vernon were removed from the 2015 Regional Alliance calculations. The City of Bell Gardens and City of Bellflower are not required to prepare an UWMP. The City of Vernon has a population of 100 and is exclusively industrial. The City of Vernon may not be required to prepare an UWMP.

SB X7-7 RA1 - Weighted 2020 Target				
Participating Member Agency Name	**2020 Target GPCD***	**2015 Population**	**(Target) X (Population)**	**Regional Alliance Weighted Average 2020 Target**
City of Downey	137	112,354	15,392,482	
City of Lakewood	99	59,331	5,873,769	
City of Long Beach	107	481,784	51,550,888	
City of Lynwood	85	62,919	5,348,115	
City of Norwalk	110	18,361	2,019,710	
City of Paramount	114	55,302	6,304,428	
City of Pico Rivera	117	39,453	4,616,001	
Pico Water District	142	22,799	3,237,458	
City of Santa Fe Springs	100	14,644	1,464,400	
City of Signal Hill	151	11,500	1,736,500	
City of South Gate	100	79,983	7,998,300	
City of Whittier	134	56,200	7,530,800	
Regional Alliance Total	1,396	1,014,630	113,072,851	**111**

**All participating agencies must submit individual SB X7-7 Tables, as applicable, showing the individual agency's calculations. These tables are: SB X7-7 Tables 0 through 6 , Table 7, any required supporting tables (as stated in SB X7-7 Table 7), and SB X7-7 Table 9, as applicable.These individual agency tables will be submitted with the individual or Regional Urban Water Management Plan.*

NOTES: The City of Bell Gardens, City of Bellflower, and City of Vernon were removed from the 2015 Regional Alliance calculations. The City of Bell Gardens and City of Bellflower are not required to prepare an UWMP. The City of Vernon has a population of 100 and is exclusively industrial. The City of Vernon may not be required to prepare an UWMP.

SB X7-7 RA1 - 2015 Target		
Weighted Average 10-15 year Baseline GPCD	Weighted Average 2020 Target	Regional Alliance 2015 Interim Target
128	111	120
NOTES		

SB X7-7 RA1 - 2015 GPCD (Actual)				
Participating Member Agency Name	**2015 Actual GPCD[1]**	**2015 Population**	**(2015 GPCD) X (2015 Population)**	**Regional Alliance 2015 GPCD (Actual)**
City of Downey	119	112,354	13,370,112	
City of Lakewood	82	59,331	4,865,142	
City of Long Beach	102	481,784	49,141,968	
City of Lynwood	80	62,919	5,033,520	
City of Norwalk	111	18,361	2,038,071	
City of Paramount	103	55,302	5,696,106	
City of Pico Rivera	103	39,453	4,063,659	
Pico Water District	108	22,799	2,462,292	
City of Santa Fe Springs	83	14,644	1,215,452	
City of Signal Hill	143	11,500	1,644,500	
City of South Gate	81	79,983	6,478,623	
City of Whittier	131	56,200	7,362,200	
Regional Alliance Totals	1,246	1,014,630	103,371,645	102

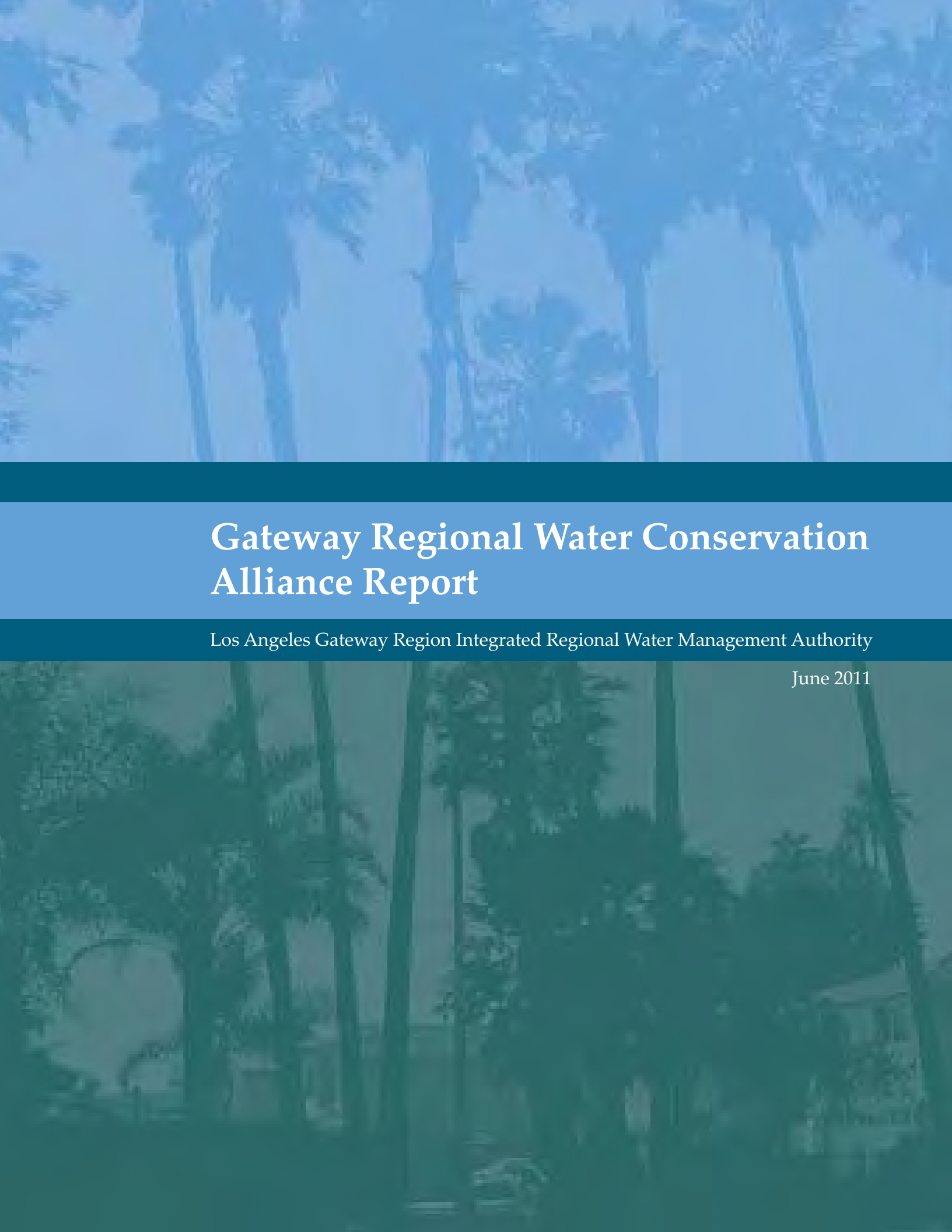
[*] *All participating agencies must submit individual SB X7-7 Tables, as applicable, showing the individual agency's calculations. These tables are: SB X7-7 Tables 0 through 6 , Table 7, any required supporting tables (as stated in SB X7-7 Table 7), and SB X7-7 Table 9, as applicable.These individual agency tables will be submitted with the individual or Regional Urban Water Management Plan.*

NOTES: The City of Bell Gardens, City of Bellflower, and City of Vernon were removed from the 2015 Regional Alliance calculations. The City of Bell Gardens and City of Bellflower are not required to prepare an UWMP. The City of Vernon has a population of 100 and is exclusively industrial. The City of Vernon may not be required to prepare an UWMP.

SB X7-7 RA1 - Compliance Verification				
2015 GPCD (Actual)	2015 Interim Target GPCD	Economic Adjustment[1] *Enter "0" if no adjustment*	Adjusted 2015 GPCD *(if economic adjustment used)*	Did Alliance Achieve Targeted Reduction for 2015?
102	120	0	102	YES

[1] *Adjustments for economic growth can be applied to either the individual supplier's data or to the aggregate regional alliance data (but not both), depending upon availability of suitable data and methods.*

NOTES



Gateway Regional Water Conservation Alliance Report

Los Angeles Gateway Region Integrated Regional Water Management Authority

June 2011

Gateway Regional Water Conservation Alliance Report

Los Angeles Gateway Region Integrated Regional Water Management Authority

June 2011

1 Introduction

The Senate Bill X7-7 (SBX7-7), the Water Conservation Act of 2009 (Act) was signed into law November 2009. This legislation set a goal of achieving a 20 percent statewide reduction in urban per capita water use, and requires urban retail water suppliers to set 2020 Urban Water Use Targets to meet that goal. Commonly referred to as the 20 by 2020 plan The Act identifies the methodologies, water use targets and reporting requirements that apply to urban water suppliers. It directed the California Department of Water Resources (DWR) to develop technical methodologies and criteria to ensure the consistent implementation of the Act, and to provide guidance to urban retail water suppliers in developing baseline water use and compliance water use targets.

The Act requires that urban retail water suppliers who have either 3000 or more connections or provide 3000 acre-feet or more of water per year to their customers, develop Per Capita Urban Water Use Targets for 2020 in order to qualify for state grants and loans. Each urban retail water supplier must include the following information in their Urban Water Management Plans (UWMPs), beginning in their submittal for 2010:

- Baseline Daily Per Capita Water Use (Baseline)
- 2020 Urban Water Use Target (2020 Target)
- 2015 Interim Urban Water Use Target (2015 Interim Target)

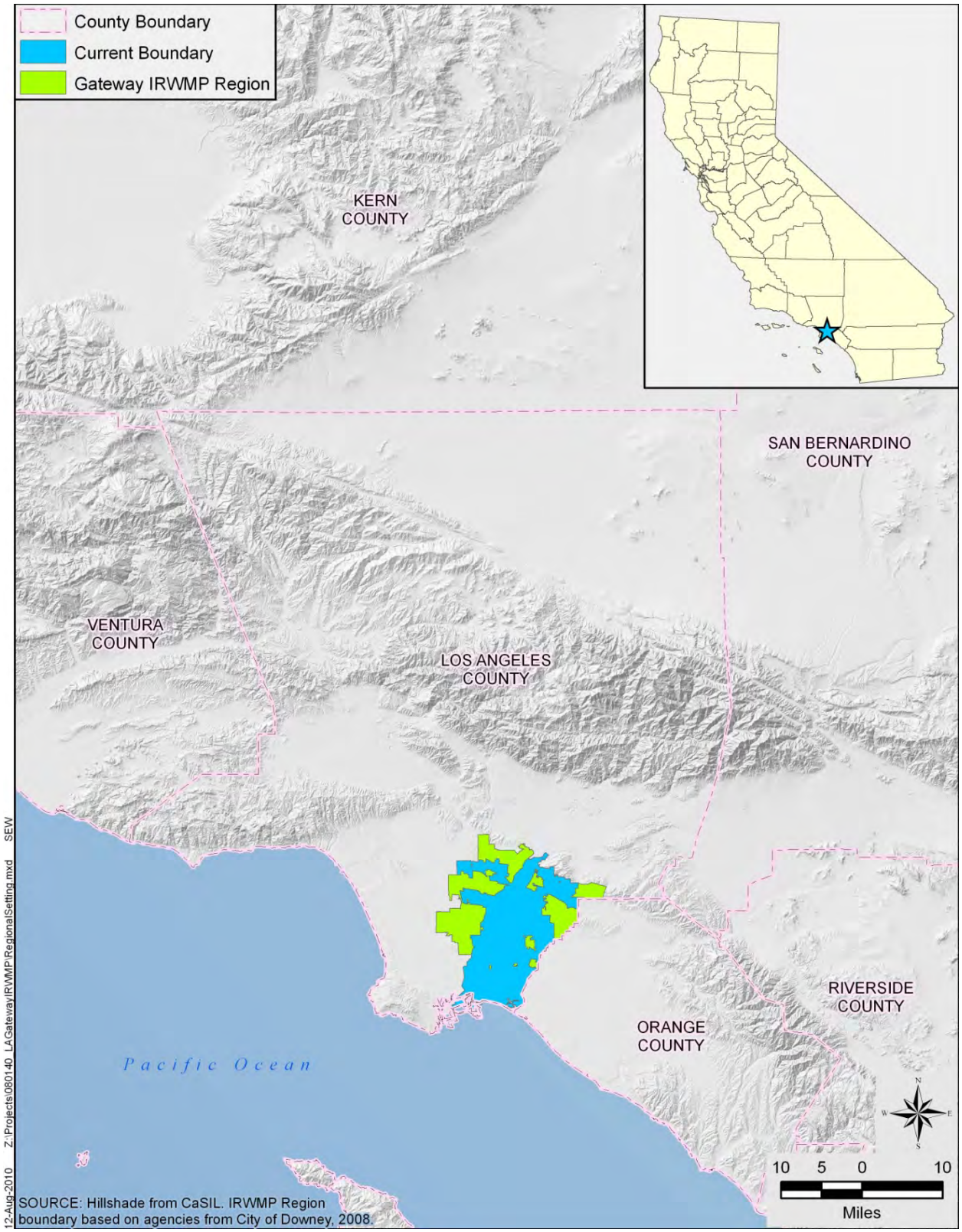
According to Sections 10608.20(a)(1) and 10608.28 of the California Water Code, urban retail water suppliers may plan, comply, and report the above information on a regional basis, an individual basis, or both.

The Gateway Cities formed the Los Angeles Gateway Integrated Water Management Authority (Gateway Authority) to develop a detailed integrated regional water management plan specifically for the Gateway area and to assist the area in other water related projects. The Gateway Authority is an official joint powers authority (JPA) under California law. There are currently 19 entities signatory to the JPA. They are actively engaging in both stakeholder and public outreach programs to expand JPA membership. The Gateway Region is located in southeast Los Angeles County, see Figure 1.

As most urban water retailers in the Gateway Region are signatories to the Gateway Authority, it is a logical extension of regional planning efforts for the Authority to comply with the reporting requirements of SBX7-7 on a regional basis.

If complying on a regional basis, a letter must be submitted to DWR stating that a Regional Alliance has been formed. The alliance members must sign an agreement committing to their participation and to meeting the 2015 interim and 2020 Urban Water Use Targets. Each board must also submit a resolution binding their agency to that agreement. Regional 2020 Targets and 2015 Interim Targets must also be included in each Regional Alliance member's Urban Water Management Plan.

Figure 1. Gateway Authority Location



If a Regional Alliance meets its regional target, then all suppliers in the alliance will be deemed compliant. If a Regional Alliance fails to meet its regional target, water suppliers in the Alliance that meet their individual targets will be deemed compliant. Water suppliers in alliances that meet neither their individual target nor their regional target will be deemed non-compliant. In general, urban water suppliers that use less than 100 gallons per capita per day are exempt from setting compliance targets. An agency that has a low per capita water use helps lower the target for the region, but can still use its individually calculated target.

The participating agencies within the Gateway Region formed a regional alliance. Copies of the draft Letter Agreement and draft resolution can be found in Appendix C.

One goal of the Gateway Regional Alliance is to provide flexibility for the cities and water agencies within the Gateway Region to comply with the requirements of SBX7-7. By enabling the cities and water agencies in the area to plan, comply, and report either regionally or independently, the Gateway Regional Alliance improves the likelihood that those cities and water agencies will qualify for grant funds. A second, long-term goal is for the participating agencies to take a regional approach to water conservation and encourage further cooperation between the participating agencies.

2 Outreach and Participation

2.1 Regional Alliance

A total of 24 urban water suppliers (cities, water companies, and water districts) in the Gateway IRWMP area were invited to form the Gateway Regional Alliance. Figure 2 below shows all of the communities located within the Gateway IRWMP area. A contact list was developed and the urban water suppliers in the Gateway IRWMP area were engaged during the early stages of the Gateway Regional Alliance process. A letter, Appendix A, was sent to each of the water supplier representatives, which included an explanation of the goals and objectives of forming the Gateway Regional Alliance and the benefits of planning, reporting, and complying with the Water Conservation Act of 2009. In addition to the letter, an email with requests for specific water use data was sent out to each urban water supplier. The email explained the type of data required for the 20x2020 Compliance calculations, and identified where that data might be found. Follow-up telephone calls were made to encourage participation in the Gateway Regional Alliance as well as provide information about the alliance process in general and to clarify any questions regarding the data requests.

Once agency-specific data was received and processed, the information was sent back to the individual representatives for their review and comment. Comments, if any, were addressed, and the individual data was entered into the database for regional calculations.

Of the 24 urban water suppliers that were contacted, 17 agencies have agreed to participate and will form the Gateway Regional Alliance.

Participating Agencies	
Bellflower-Somerset Mutual Water Company	City of Bell Gardens
City of Cerritos	City of Downey
City of Huntington Park	City of Lakewood
City of Long Beach	City of Lynwood
City of Norwalk	City of Paramount
City of Pico Rivera	Pico Water District
City of Santa Fe Springs	City of Signal Hill
City of South Gate	City of Vernon
City of Whittier	

The remaining urban water suppliers, listed below, chose not to participate because they are not required to submit an UWMP or stated that they would comply with the SBX7-7 requirements individually.

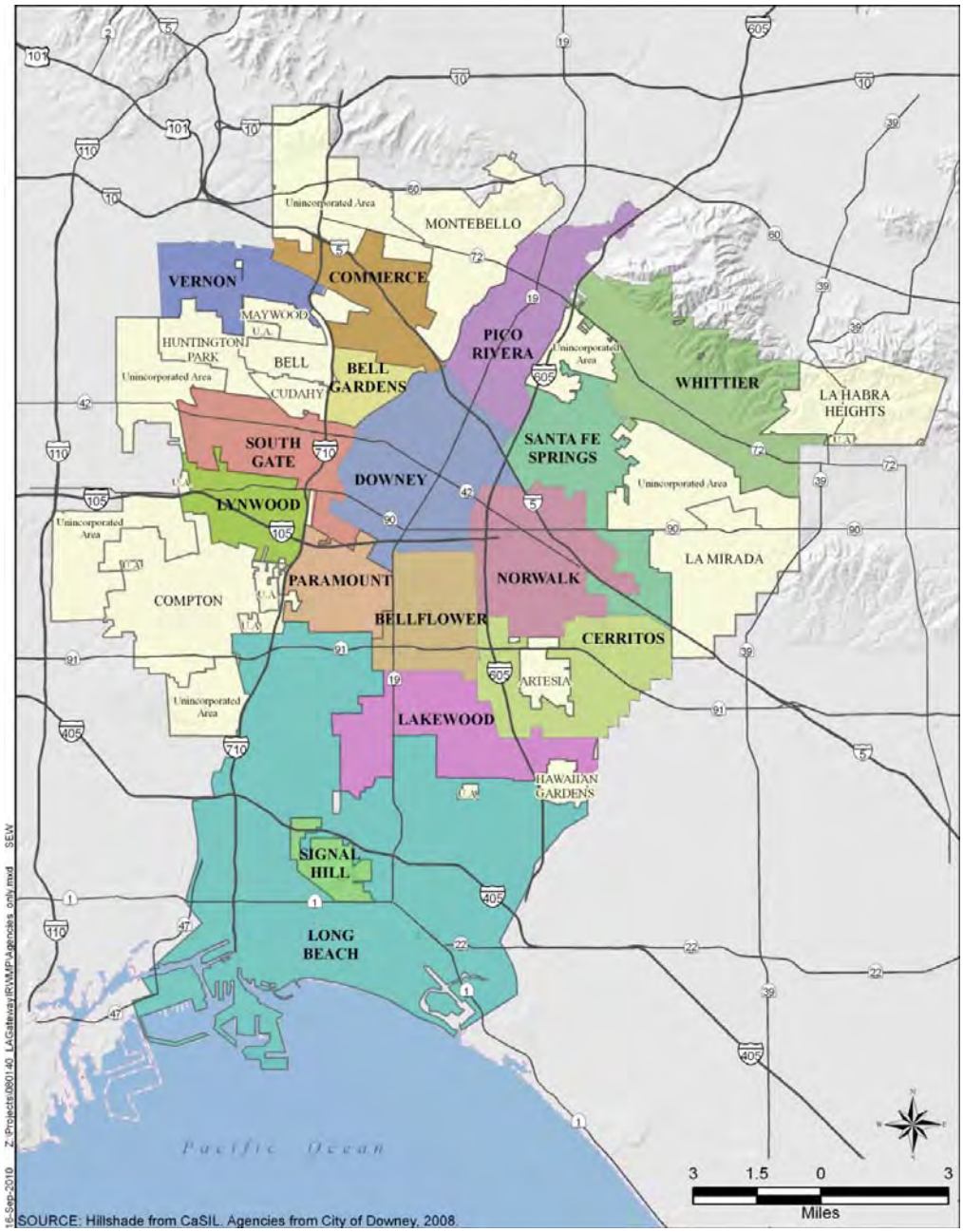
California Water Service Company	Doing own calculations
City of Commerce	UWMP not required
Golden State Water Company	Doing own calculations
La Habra Heights County Water District	UWMP not required
Montebello Land & Water	Doing own calculations
Park Water Company	Doing own calculations
San Gabriel Valley Water Company	Doing own calculations
Suburban Water Systems	Doing own calculations

2.2 Public Hearing

A public hearing was conducted as required by the guidelines to gather any public comments on the formation of a regional alliance for reporting water use targets and on the draft results of the 20x2020 calculations (presented later in this document). The hearing was held on May 13 in conjunction with a regular meeting of the Gateway Authority. The hearing was noticed on May 4 and May 10, 2011 in the Los Angeles Times and the Long Beach Press Telegram, as well as being noticed in the Gateway Authority May 13, 2011 Agenda.

On behalf of the Authority, Gateway Authority's consultant presented the background and results of the 2015 and 2020 water use targets for the region and for each individual participating agency. There were no comments submitted at the public hearing.

Figure 2. Gateway IRWMP Area Map



3 Calculations

The following is an explanation of the elements used to calculate the urban per capita water use for both the 10-Year and the 5-Year Baseline periods:

- **Population Estimate:** The population estimates were obtained from each agency's DWR Public Water System Statistics Reports. Each agency's service area population estimates were developed based on US Census data and California Department of Finance data.
- **Groundwater Extraction:** Groundwater extraction values from each agency were obtained from analysis of DWR Public Water System Statistics Reports. Groundwater used to develop water production wells and groundwater sold to other water utilities was deducted from the overall groundwater extraction volume. This identified the amount of groundwater entering a given agency's distribution system.
- **Purchased Water:** The Alliance participants made numerous water purchases during the selected 10-Year and 5-Year Baseline periods. Additional water was purchased intra-regionally – between suppliers – as well as from the Central Basin Municipal Water District. Purchased water was excluded from the selling agency's calculated water use, but included in the purchasing agency's water use; thus the same water was not counted twice.
- **Distribution System Storage Change:** The net change in the distribution system storage was not included in the gross water calculation.
- **Agricultural Water Use and Process Water:** Agricultural and process water uses were not included in the gross water use calculation.
- **Gross Water Use Before Indirect Recycled Water Use:** Groundwater extractions and purchased potable water were combined to obtain the gross water use.
- **Indirect Water Use Deduction:** The Water Replenishment District of Southern California (WRD) uses recycled water as a supplement to imported water, local water, and natural recharge for replenishment of the groundwater basin. Table A-1 below (Water Replenishment District of Southern California, Engineering Survey and Report, 2011, p. A-6) displays the historical amount of water replenished in the Montebello Forebay Spreading Grounds. The five-year average of recycled water present in the recharged water was estimated for each year in the baseline period. This yearly percentage of recycled water, a 10 percent "in-basin loss," and a 3 percent "distribution system loss," were excluded from the groundwater extraction for each year in the baseline period.
- **Adjusted Gross Water Use Before Indirect Recycled Water Use:** Groundwater extractions adjusted for indirect recycled water use and purchased potable water were combined to obtain the adjusted urban water use.

Table A-1

(In Acre-feet)

YEAR	GROUNDWATER PRODUCTION	IMPORTED WATER FOR DIRECT USE*	RECLAIMED WATER FOR DIRECT USE*	TOTAL
WATER YEAR				
1960-61	354,400	196,800		551,200
1961-62	334,900	178,784		513,684
1962-63	284,500	222,131		506,631
1963-64	280,400	257,725		538,125
1964-65	271,400	313,766		585,166
1965-66	283,600	308,043		591,643
1966-67	269,000	352,787		621,787
1967-68	281,700	374,526		656,226
1968-69	275,400	365,528		640,928
1969-70	284,800	398,149		682,949
1970-71	272,500	397,122		669,622
1971-72	280,900	428,713		709,613
1972-73	265,900	400,785		666,685
1973-74	266,300	410,546		676,846
1974-75	269,800	380,228		650,028
1975-76	274,700	404,958		679,658
1976-77	271,300	355,896		627,196
1977-78	254,900	373,116		628,016
1978-79	265,000	380,101	100 [(a)]	645,201
1979-80	266,600	397,213	200	664,013
1980-81	269,626	294,730	300	564,656
1981-82	264,461	391,734	300	656,495
1982-83	252,090	408,543	400	661,033
1983-84	248,590	441,151	1,800	691,541
1984-85	245,831	451,549	2,000	699,380
1985-86	249,334	427,860	2,400	679,594
1986-87	244,686	478,744	2,300	725,730
1987-88	238,541	479,318	3,500	721,359
1988-89	244,530	466,166	5,300	715,996
1989-90	245,668	448,285	5,900	699,853
1990-91	240,700	485,109	5,000	730,809
1991-92	252,718	395,191	4,900	652,809
1992-93	190,736	388,949	824	580,509
1993-94	198,391	483,287	3,413	685,091
1994-95	221,998	437,191	6,143	665,332
1995-96	234,636	426,699	19,804	681,139
1996-97	240,137	436,569	25,046	701,752
1997-98	240,164	375,738	27,075	642,977
1998-99	256,344	396,655	30,510	683,509
1999-00	252,082	395,681	33,589	681,352
2000-01	249,231	395,024	32,589	676,844
2001-02	250,231	395,799	38,694	684,724
2002-03	242,214	381,148	38,839	662,201
2003-04	248,378	389,233	36,626	674,237
2004-05	230,004	402,660	33,988	666,652
2005-06	227,839	366,815	35,301	629,955
2006-07	235,770	376,492	41,899	654,161
2007-08	244,732	346,035	45,120	635,887
2008-09	243,402	320,711	43,153	607,266
2009-10	241,329	278,857	43,547	563,734
TOTAL	12,852,393	19,058,840	570,561	32,481,793

(a) Los Coyotes on-line in 1979; Long Beach on-line in 1980

** - Includes imported & recycled at seawater barriers, but not spreading grounds.*

The Act requires that a 2020 Target and 2015 Interim Target be calculated using the above elements and one of four methods. These methods, as described in the 2010 UWMP Guidebook, as follows:

- **Method 1:** Eighty percent of the water supplier's baseline per capita water use.

- **Method 2:** Per capita daily water use estimated using the sum of performance standards applied to indoor residential use, landscaped area water use, and CII uses.
- **Method 3:** Ninety-five percent of the applicable state hydrologic region target.
- **Method 4:** Calculated savings of metering currently unmetered water connections and achieving water conservation measures in three water use sectors.

While the above methods are used to calculate the 2020 Target and 2015 Interim Target for individual agencies, Method 9 is used to calculate the 2020 Target and 2015 Interim Target for a regional alliance. Method 9 does not utilize a distinct set of calculations; rather, the above methods are applied to the region using one of three options described in the 2010 UWMP Guidebook. These options are listed below:

- **Option 1:** A population-weighted average. A target is calculated for an individual urban water supplier, using any method described above, and for any baseline period (ending between December 31, 2004 and December 31, 2010). An agency's target is then multiplied by the ratio of that agency's population to the total population. Summing the resulting values from all participating agencies yields the Regional 2020 Target.
- **Option 2 and Option 3:** An aggregate of individual agency water use and population information. There are slight differences between Option 2 and Option 3, but they can be similarly described. The water use and population information is summed for all participating agencies, and the regional base daily per capita water use is calculated for each year. The 10-year or 15-year baseline is calculated for the region, and one of the four methods described above is applied to obtain the 2020 Target.

4 Results

Multiple Method-and-Option combinations were analyzed to calculate a 2020 Target that would best suit the Gateway Regional Alliance. While the Gateway Regional Alliance elected to calculate the 2020 Target using Option 1 with Method 1 and Method 3, the results of other approaches can be found in Appendix B. The following table details the agency-specific 5-year Baseline, 10-year Baseline, and 2020 Target as well as the Regional 10-Year Baseline, the Regional 2020 Target, and the Regional 2015 Interim Target.

Table 2. Regional Target Calculation

Methodology 9: Option 1 – Population Weighted Average								
City/Agency	**2010 Population**	**2010 5yr Baseline GPCD**	**2010 10yr Baseline GPCD**	**Baseline Weighted Use GPCD**	**2020 Target GPCD**	**Method**	**2020 Target Weighted Use GPCD**	**2015 Interim Target**
Bell Gardens	19,887	48	49	0.8	49	1	0.8	
BSMWC	46,000	99	106	3.9	94	3	3.5	
Cerritos	51,113	137	144	6.0	130	3	5.4	
Downey	110,452	114	113	10.1	108	3	9.6	
Huntington Park	64,219	62	65	3.4	65	1	3.4	
Lakewood	59,660	106	106	5.1	101	3	4.9	
Long Beach	462,257	112	120	44.9	106	3	39.7	
Lynwood	73,212	64	67	4.0	67	1	4.0	
Norwalk	18,361	115	118	1.7	110	3	1.6	
Paramount	57,805	98	101	4.7	93	3	4.4	
Pico Rivera*	62,942	102	102	5.2	97	3	4.9	
Santa Fe Springs	17,438	328	350	4.9	280	1	4.0	
Signal Hill	11,465	153	161	1.5	142	3	1.3	
South Gate	94,746	73	79	6.0	79	1	6.0	
Vernon	90	83005	81643	5.9	65314	1	4.8	
Whittier	87,128	69	71	5.0	71	1	5.0	
Regional Totals	1,236,775			113.2			103.1	108.2
*City of Pico Rivera and Pico Water District were combined								

5 Regional Alliance Formation

5.1 Alliance Process

As noted previously, the following urban water suppliers have committed to forming the Gateway Regional Alliance.

Participating Agencies	
Bellflower-Somerset Mutual Water Company	City of Bell Gardens
City of Cerritos	City of Downey
City of Huntington Park	City of Lakewood
City of Long Beach	City of Lynwood
City of Norwalk	City of Paramount
City of Pico Rivera	Pico Water District
City of Santa Fe Springs	City of Signal Hill
City of South Gate	City of Vernon
City of Whittier	

A Letter Agreement will be signed by all participating agencies and submitted to DWR to inform them that the Gateway Regional Alliance has been formed.

Each individual agency will adopt a Board Resolution and has agreed to take it to their individual Board of Supervisors for approval. While there may be minor differences due to formatting and preferred language the substance of the Resolution is the same for all agencies.

As indicated in the 2010 UWMP Guidebook, there are consequences should any member of the Gateway Regional Alliance decide to leave, or should the Gateway Regional Alliance decide to dissolve. If an individual agency withdraws from the Gateway Regional Alliance, the withdrawing water supplier must then comply individually. The water suppliers remaining in the Gateway Regional Alliance must revise the regional baseline and target data and alliance membership in the subsequent UWMP. The memorandum of understanding or other legal agreements governing the alliance may define additional consequences or remedies.

If the Gateway Regional Alliance dissolves before 2020, each affected water supplier must then comply individually or form or join another alliance. An affected water supplier that had not

previously submitted an individual urban water management plan has to submit an urban water management plan or a regional water management plan. The memorandum of understanding or other legal agreements governing the alliance may define additional consequences or remedies.

The Gateway Regional Alliance will revisit the calculations in 2015 and address any changes to the composition of the alliance or differences in the data. If any agencies have withdrawn from the alliance, or if new agencies have expressed an interest in joining, the same process will be used to calculate a new Baseline and 2020 Target. In addition to accepting requests to join, the Gateway Regional Alliance will make more outreach attempts to the remaining agencies within the Gateway IRWMP area.

5.2 Integration with Urban Water Management Plans

The Gateway Regional Alliance acknowledges that DWR will collect the data pertaining to the alliance through the individual supplier UWMPs, the Central Basin Regional UWMP, and this report. The following information; most of which has been detailed in this report, will also be presented in the individual supplier's UWMPs:

- A list of all regional alliances of which an individual supplier is a member
- Baseline Gross Water Use and Service Area Population (2010, 2015, 2020)
- Individual 2020 Urban Water Use Target and Interim 2015 Urban Water Use Target
- Compliance Year Gross Water Use (2015 and 2020) and Service Area Population
- Adjustments to Gross Water Use in the compliance year (2015 and 2020)

Central Basin will include the data elements that are now required to be included in the individual UWMPs (above), as well as the same data elements aggregated over all regional alliance members in the regional UWMP.

6 Conclusion

The Gateway Regional Alliance has been formed by agencies in the Gateway IRWMP area for the purpose of complying with the requirements of SBX7-7. In accordance with the methodologies and approaches outlined in the 2010 UWMP Guidebook, the Gateway Regional Alliance has calculated the Regional Baseline Daily Per Capita Water Use, Regional 2020 Urban Water Use Target, and Regional 2015 Interim Urban Water Use Target. The following table displays these values.

Gateway Regional Alliance Summary Values

Regional 2010 Population	1,236,775
Regional 10-Yr Baseline GPCD (Ending December 31, 2010)	113.2
Regional 2015 Interim Target GPCD	108.2
Regional 2020 Target GPCD	103.1

7 References

California Department of Water Resources. March 2011. Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan.

Water Replenishment District of Southern California. March 4, 2011. Engineering Survey and Report.

Appendix A

Los Angeles Gateway Region

Integrated Regional Water Management
Joint Powers Authority
11111 Brookshire Avenue, Downey, California 90241
(562) 904-2180 (ph) (562) 923-6388 (fax)

March 11, 2011

Re: Offer of Assistance in Supplying State-Mandated Water Usage Data for your Urban Water Management Plan

Dear :

The Gateway Authority (Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority) is embarking on a regional compliance approach to fulfill the requirements of the Water Conservation Act of 2009 (SBx7-7).

The provisions of the Water Conservation Act, signed by the Governor on November 10, 2009, require that you develop per capita urban water use targets for 2020 and interim dates in order to qualify for state grants and loans. This can be a time-consuming, labor-intensive task. One of the options provided by the statutes, however, include developing these water conservation goals on a regional basis. The Gateway Authority, as a regional entity, is in the process of coordinating and compiling the 20x2020 targets for its members and other stakeholders. The Gateway Authority will need to provide that submittal to the Department of Water Resources (DWR) by June 30, 2011.

Because compliance can be assessed regionally, if the region does meet that regional target, all suppliers in the alliance will be deemed compliant. Additional benefits of regional compliance include a reduction in reporting costs, continuing regional coordination and cooperation, and a contribution to more efficient water use.

The Gateway Authority would like to extend an invitation to you to participate in the Gateway Authority's regional effort.

If you are interested in participating in this process, or have questions, please contact me at ashubbell@cox.net, or 858-395-5083. For your convenience, I have attached a fact sheet with information about who we are. Our consultant, Bookman-Edmonston/GEI Consultants, has already begun collecting information for the process; therefore, your rapid response to this invitation is requested. Please provide indication of your interest no later than March 31, 2011.

Sincerely,

Annette Hubbell
Executive Officer
Gateway Authority

enc: Gateway Authority Fact Sheet

Appendix B

Regional Target Calculation
Methodology 9 - Option 1: Population Weighted Average
Targets Calculated Using only Method 1

City/Agency	2010 Population	2010 Baseline GPCD	Baseline Weighted Use (Gal)	2020 Target GPCD	2020 Target Weighted Use* (Gal)	2015 Interim Target
Bell Gardens	19,887	49	0.8	49	0.8	
BSMWC	46,000	106	3.9	85	3.1	
Cerritos	51,113	144	6.0	115	4.8	
Downey	110,452	113	10.1	91	8.1	
Huntington Park	64,219	65	3.4	65	3.4	
Lakewood	59,660	106	5.1	85	4.1	
Long Beach	462,257	120	44.9	96	35.9	
Lynwood	73,212	67	4.0	67	4.0	
Norwalk	18,361	118	1.7	94	1.4	
Paramount	57,805	101	4.7	81	3.8	
Pico Rivera	62,942	102	5.2	82	4.2	
Santa Fe Springs	17,438	350	4.9	280	4.0	
Signal Hill	11,465	161	1.5	129	1.2	
South Gate	94,746	79	6.0	79	6.0	
Vernon	90	81643	5.9	65314	4.8	
Whittier	87,128	71	5.0	71	5.0	
Total	1,236,775		113.2		94.4	103.8

Target was calculated for all agencies using Method 1: 80% Reduction

Regional Target Calculation
Methodology 9 - Option 2: Aggregate Population and Water Use
Target Calculated Using Method 1

(1) Base Year	(2) Service Area Population	(3) Gross Water Use (Gal/Day)	(4) Daily Per Capita Water Use (3)/(2)
1996			
1997			
1998			
1999			
2000			
2001	1,200,915	139,356,293	116
2002	1,206,434	142,270,711	118
2003	1,210,898	138,616,335	114
2004	1,215,776	142,060,619	117
2005	1,245,155	139,721,130	112
2006	1,235,223	141,667,824	115
2007	1,244,926	143,739,334	115
2008	1,244,112	135,777,434	109
2009	1,240,450	125,567,444	101
2010	1,236,775	118,068,398	95
		Total of Column (4)	1113
		Baseline Daily Per Capita Water Use	111

(1) Base Year	(2) Service Area Population	(3) Gross Water Use (Gal/Day)	(4) Daily Per Capita Water Use (3)/(2)
2006	1,235,223	141,667,824	115
2007	1,244,926	143,739,334	115
2008	1,244,112	135,777,434	109
2009	1,240,450	125,567,444	101
2010	1,236,775	118,068,398	95
		Total of Column (4)	536
		5-Year Base Daily Per Capita Water Use	107

Gateway Regional Alliance, 2020 Urban Water Use Target GPCD (Method 1)	89
Gateway Regional Alliance, 2015 Interim Urban Water Use Target GPCD (Average of Baseline and 2020 Target)	100

Regional Target Calculation
Methodology 9 - Option 2: Aggregate Population and Water Use
Target Calculated Using Method 3

(1) Base Year	(2) Service Area Population	(3) Gross Water Use (Gal/Day)	(4) Daily Per Capita Water Use (3)/(2)
1996			
1997			
1998			
1999			
2000			
2001	1,200,915	139,356,293	116
2002	1,206,434	142,270,711	118
2003	1,210,898	138,616,335	114
2004	1,215,776	142,060,619	117
2005	1,245,155	139,721,130	112
2006	1,235,223	141,667,824	115
2007	1,244,926	143,739,334	115
2008	1,244,112	135,777,434	109
2009	1,240,450	125,567,444	101
2010	1,236,775	118,068,398	95
		Total of Column (4)	1113
		Baseline Daily Per Capita Water Use	111

(1) Base Year	(2) Service Area Population	(3) Gross Water Use (Gal/Day)	(4) Daily Per Capita Water Use (3)/(2)
2006	1,235,223	141,667,824	115
2007	1,244,926	143,739,334	115
2008	1,244,112	135,777,434	109
2009	1,240,450	125,567,444	101
2010	1,236,775	118,068,398	95
		Total of Column (4)	536
		5-Year Base Daily Per Capita Water Use	107

Gateway Regional Alliance, 2020 Urban Water Use Target GPCD (Method 3)	102
Gateway Regional Alliance, 2015 Interim Urban Water Use Target GPCD (Average of Baseline and 2020 Target)	107

Appendix C

Letter Agreement

Between and Among the Cities of Cerritos, Downey, Huntington Park, Lakewood, Long Beach, Lynwood, Norwalk, Paramount, Pico Rivera, Santa Fe Springs, Signal Hill, South Gate, Vernon, Whittier, and Pico Water District

For

Establishing a Regional Alliance to Comply with SB X7-7, the Water Conservation Act of 2009

Recitals

1. The Water Conservation Act of 2009 (SB X7-7) set a goal of achieving a 20% reduction in statewide urban per capita water use by the year 2020 and requires urban water retailers to set a 2020 urban per capita water use target. SB X7-7 provides that urban water retailers may plan, comply and report on a regional basis, individual basis, or both.

2. The Parties to this Letter Agreement (Cities of Cerritos, Downey, Huntington Park, Lakewood, Long Beach, Lynwood, Norwalk, Paramount, Pico Rivera, Santa Fe Springs, Signal Hill, South Gate, Vernon, Whittier, and Pico Water District) are eligible to form a "regional Alliance" pursuant to the California *Department of Water Resources Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* (DWR Methodologies) because the Parties are recipients of water from a common wholesale water supplier, Central Basin Municipal Water District, and are also a part of an Integrated Regional Water Management (IRWM) planning area, the Gateway Region IRWM. The Parties wish to establish a Regional Alliance for purposes of complying with SB X7-7.

Agreement for the Regional Alliance Formation, Target Calculation, and Reporting

Section 1. Regional Alliance Formation and Target Calculation

The Parties hereby form a Regional Alliance and agree to inform DWR, prior to July 1, 2011, that a Regional Alliance has been formed, pursuant to the DWR Methodologies. The Parties agree that the Regional Alliance Target will be calculated using Option X (as described in DWR Methodology 9). Each Party will include the Regional Alliance Target in its individual 2010 Urban Water Management Plan.

Section 2. Regional Alliance Review

The Parties intend to review and re-calculate the Regional Alliance and Regional Alliance Target, no later than December 31, 2015, in preparation of their respective 2015 Urban Water Management Plans.

Section 3. Regional Alliance Reporting

The Parties intend to prepare and submit Regional Alliance Reports pursuant to the DWR Methodologies, including, but not limited to, the following information:

- Baseline Gross Water Use and Service Area Population,
- 2015 and 2020 Water Use Targets (Individual and Regional),
- Compliance Year Gross Water Use and Service Area Population, and
- Adjustments to Gross Water Use in Compliance Year

Section 4. Regional Water Supply Planning

The Parties intend to participate in discussions regarding regional water supply planning.

Section 5. Regional Alliance Dissolution

The Parties agree that each Party can withdraw from the Regional Alliance at any time without penalty by giving written notice to all other Parties. If a Party withdraws from the Regional Alliance, the Parties agree that the Regional Target will be recalculated among remaining participating Parties as set forth in the DWR Methodologies.

Section 6. Miscellaneous

This Letter Agreement shall be between and among those Parties that have executed this Letter Agreement by (Month/Day), 2011. If all Parties have not executed this Letter Agreement by said date, the Parties who have executed this Letter Agreement by (Month/Day), 2011, agree that the Regional Target will be recalculated among participating Parties as set forth in the DWR Methodologies.

Section 7. Letter Agreement Authorization

This Letter Agreement may be signed in counterparts. By signing below, each signatory states that he or she is authorized to sign this Letter Agreement on behalf of the Party for which he or she is signing.

Signature Date	Signature Date
Print Name City of Cerritos	Print Name City of Downey
LEFT BLANK INTENTIONALLY	Signature Date
	Print Name City of Huntington Park

Signature Date	Signature Date
Print Name City of Lakewood	Print Name City of Long Beach
Signature Date	Signature Date
Print Name City of Lynwood	Print Name City of Norwalk
Signature 5/4/11 Date	Signature Date
LINDA BENEDETTI-LEAL Print Name City of Paramount	Print Name City of Pico Rivera
Signature Date	Signature Date
Print Name City of Santa Fe Springs	Print Name City of Signal Hill
Signature Date	Signature Date
Print Name City of South Gate	Print Name City of Vernon
Signature Date	Signature Date
Print Name City of Whittier	Print Name Pico Water District

RESOLUTION NO. 2011-24

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LAKEWOOD AUTHORIZING AND APPROVING A LETTER OF AGREEMENT BETWEEN AND AMONG THE CITIES OF DOWNEY, HUNTINGTON PARK, LAKEWOOD, LONG BEACH, LYNWOOD, NORWALK, PARAMOUNT, PICO RIVERA, SANTA FE SPRINGS, SIGNAL HILL, SOUTH GATE, VERNON, WHITTIER, AND PICO WATER DISTRICT FOR ESTABLISHING A REGIONAL ALLIANCE TO COMPLY WITH SB X7-7, THE WATER CONSERVATION ACT OF 2009

WHEREAS, Senate Bill X7-7, the Water Conservation Act was signed into law in 2009; and

WHEREAS, the Water Conservation Act of 2009 sets a goal for urban water suppliers to reduce per capita water use by 20 percent by the year 2020; and

WHEREAS, the City desires to participate in a regional alliance for the purposes of compliance with the Water Conservation Act of 2009; and

WHEREAS, the City further supports the regional water planning program sponsored by the Los Angeles Gateway Region Integrated Water Management Joint Powers Authority.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Lakewood that it does hereby authorize and approve a letter agreement between and among the cities of Downey, Huntington Park, Lakewood, Long Beach, Lynwood, Norwalk, Paramount, Pico Rivera, Santa Fe Springs, Signal Hill, South Gate, Vernon, Whittier, and Pico Water District for establishing a regional alliance to comply with SB X7-7, the Water Conservation Act of 2009.

BE IT FURTHER RESOLVED that the City Manager is hereby authorized and directed to take all actions to effectuate this agreement for and on behalf of the City of Lakewood, including execution, if necessary, in substantially similar form to the agreement attached hereto as Exhibit "A," subject to minor modifications by the City Manager or City Attorney.

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

Mayor

ATTEST:

City Clerk

LAGERLOF, SENECAL, DRESCHER & SWIFT
301 North Lake Avenue, 10th Floor
Pasadena, California 91101
(818) 793-9400 or (213) 385-4345

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

CENTRAL AND WEST BASIN WATER REPLENISHMENT DISTRICT, etc., Plaintiff, v. CHARLES E. ADAMS, et al., Defendants.	No. 786,656 SECOND AMENDED JUDGMENT (Declaring and establishing water rights in Central Basin and enjoining extractions therefrom in excess of specified quantities.)
CITY OF LAKEWOOD, a municipal corporation, Cross-Complainant, v. CHARLES E. ADAMS, et al., Cross-Defendants.	

The above-entitled matter duly and regularly came on for trial in Department 73 of the above-entitled Court (having been transferred thereto from Department 75 by order of the presiding Judge), before the Honorable Edmund M. Moor, specially assigned Judge, on May 17, 1965, at 10:00 a.m. Plaintiff was represented by its attorneys BEWLEY, KNOOP, LASSLEBEN & WHELAN,

MARTIN E. WHELAN, JR., and EDWIN H. VAIL, JR., and cross-complainant was represented by its attorney JOHN S. TODD. Various defendants and cross-defendants were also represented at the trial. Evidence both oral and documentary was introduced. The trial continued from day to day on May 17, 18, 19, 20, 21 and 24, 1965, at which time it was continued by order of Court for further trial on August 25, 1965, at 10:00 a.m. in Department 73 of the above-entitled Court; whereupon, having then been transferred to Department 74, trial was resumed in Department 74 on August 25, 1965, and then continued to August 27, 1965 at 10:00 a.m. in the same Department. On the latter date, trial was concluded and the matter submitted. Findings of fact and conclusions of law have heretofore been signed and filed. Pursuant to the reserved and continuing jurisdiction of the court under the judgment herein, certain amendments to said judgment and temporary orders have heretofore been made and entered. Continuing jurisdiction of the court for this action is currently assigned to HON. FLORENCE T. PICKARD. Motion of Plaintiff herein for further amendments to the judgment, notice thereof and of the hearing thereon having been duly and regularly given to all parties, came on for hearing in Department 38 of the above-entitled court on MAY 6, 1991 at 8:45 a.m. before said HONORABLE PICKARD. Plaintiff was represented by its attorneys LAGERLOF, SENECAL, DRESCHER & SWIFT, by William F. Kruse. Various defendants were represented by counsel of record appearing on the Clerk's records. Hearing thereon was concluded on that date. The within "Second Amended Judgment" incorporates amendments and orders heretofore made to the extent presently operable and

amendments pursuant to said last mentioned motion. To the extent this Amended Judgment is a restatement of the judgment as heretofore amended, it is for convenience in incorporating all matters in one document, is not a readjudication of such matters and is not intended to reopen any such matters. As used hereinafter the word "judgment" shall include the original judgment as amended to date. In connection with the following judgment, the following terms, words, phrases and clauses are used by the Court with the following meanings:

"Administrative Year" means the water year until operation under the judgment is converted to a fiscal year pursuant to Paragraph 4, Part I, p. 53 hereof, whereupon it shall mean a fiscal year, including the initial 'short fiscal year' therein provided.

"Allowed Pumping Allocation" is that quantity in acre feet which the Court adjudges to be the maximum quantity which a party should be allowed to extract annually from Central Basin as set forth in Part I hereof, which constitutes 80% of such party's Total Water Right.

"Allowed Pumping Allocation for a particular Administrative year" and "Allowed Pumping Allocation in the following Administrative year" and similar clauses, mean the Allowed Pumping Allocation as increased in a particular Administrative year by any authorized carryovers pursuant to Part III, Subpart A of this judgment and as reduced by reason of any over-extractions in a previous Administrative year.

"Artificial Replenishment" is the replenishment of Central Basin achieved through the spreading of imported or reclaimed

water for percolation thereof into Central Basin by a governmental agency.

"Base Water Right" is the highest continuous extractions of water by a party from Central Basin for a beneficial use in any period of five consecutive years after the commencement of overdraft in Central Basin and prior to the commencement of this action, as to which there has been no cessation of use by that party during any subsequent period of five consecutive years. As employed in the above definition, the words "extractions of water by a party" and "cessation of use by that party" include such extractions and cessations by any predecessor or predecessors in interest.

"Calendar Year" is the twelve month period commencing January 1 of each year and ending December 31 of each year.

"Central Basin" is the underground water basin or reservoir underlying Central Basin Area, the exterior boundaries of which Central Basin are the same as the exterior boundaries of Central Basin Area.

"Central Basin Area" is the territory described in Appendix "1" to this judgment, and is a segment of the territory comprising Plaintiff District.

"Declared water emergency" shall mean a period commencing with the adoption of a resolution of the Board of Directors of the Central and West Basin Water Replenishment District declaring that conditions within the Central Basin relating to natural and imported supplies of water are such that, without implementation of the water emergency provisions of this Judgment, the water resources of the Central Basin risk degradation. In making such

declaration, the Board of Directors shall consider any information and requests provided by water producers, purveyors and other affected entities and may, for that purpose, hold a public hearing in advance of such declaration. A Declared Water Emergency shall extend for one (1) year following such resolution, unless sooner ended by similar resolution.

"Extraction", "extractions", "extracting", "extracted", and other variations of the same noun and verb, mean pumping, taking, diverting or withdrawing ground water by any manner or means whatsoever from Central Basin.

"Fiscal Year" is the twelve (12) month period July 1 through June 30 following.

"Imported Water" means water brought into Central Basin Area from a non-tributary source by a party and any predecessors in interest, either through purchase directly from The Metropolitan Water District of Southern California or by direct purchase from a member agency thereof, and additionally as to the Department of Water and Power of the City of Los Angeles, water brought into Central Basin Area by that party by means of the Owens River Aqueduct.

"Imported Water Use Credit" is the annual amount, computed on a calendar year basis, of imported water which any party and any predecessors in interest, who have timely made the required filings under Water Code Section 1005.1, have imported into Central Basin Area in any calendar year and subsequent to July 9, 1951, for beneficial use therein, but not exceeding the amount by which that party and any predecessors in interest reduces his or their extractions of ground water from Central Basin in that

calendar year from the level of his or their extractions in the preceding calendar year, or in any prior calendar year not earlier than the calendar year 1950, whichever is the greater.

"Natural Replenishment" means and includes all processes other than "Artificial Replenishment" by which water may become a part of the ground water supply of Central Basin.

"Natural Safe Yield" is the maximum quantity of ground water, not in excess of the long term average annual quantity of Natural Replenishment, which may be extracted annually from Central Basin without eventual depletion thereof or without otherwise causing eventual permanent damage to Central Basin as a source of ground water for beneficial use, said maximum quantity being determined without reference to Artificial Replenishment.

"Overdraft" is that condition of a ground water basin resulting from extractions in any given annual period or periods in excess of the long term average annual quantity of Natural Replenishment, or in excess of that quantity which may be extracted annually without otherwise causing eventual permanent damage to the basin.

"Party" means a party to this action. Whenever the term "party" is used in connection with a quantitative water right, or any quantitative right, privilege or obligation, or in connection with the assessment for the budget of the Watermaster, it shall be deemed to refer collectively to those parties to whom are attributed a Total Water Right in Part I of this judgment.

"Person" or "persons" include individuals, partnerships, associations, governmental agencies and corporations, and any and all types of entities.

"Total Water Right" is the quantity arrived at in the same manner as in the computation of "Base Water Right", but including as if extracted in any particular year the Imported Water Use Credit, if any, to which a particular party may be entitled.

"Water" includes only non-saline water, which is that having less than 1,000 parts of chlorides to 1,000,000 parts of water.

"Water Year" is the 12-month period commencing October 1 of each year and ending September 30th of the following year.

In those instances where any of the above-defined words, terms, phrases or clauses are utilized in the definition of any of the other above-defined words, terms, phrases and clauses, such use is with the same meaning as is above set forth.

NOW THEREFORE, IT IS ORDERED, DECLARED, ADJUDGED AND DECREED WITH RESPECT TO THE ACTION AND CROSS-ACTION AS FOLLOWS:

I. DECLARATION AND DETERMINATION OF WATER RIGHTS OF PARTIES; RESTRICTION ON THE EXERCISE THEREOF.[1]

1. Determination of Rights of Parties.

(a) Each party, except defendants, The City of Los Angeles and Department of Water and Power of the City of Los Angeles, whose name is hereinafter set forth in the tabulation at the conclusion of Subpart 3 of Part 1, and after whose name there

[1]Headings in the judgment are for purposes of reference and the language of said headings do not constitute, other than for such purpose, a portion of this judgment.

appears under the column "Total Water Right" a figure other than "0", was the owner of and had the right to extract annually groundwater from Central Basin for beneficial use in the quantity set forth after that party's name under said column "Total Water Right" pursuant to the Judgment as originally entered herein. Attached hereto as Appendix "2" and by this reference made a part hereof as though fully set forth are the water rights of parties and successors in interest as they existed as of the close of the water year ending September 30, 1978 in accordance with the Watermaster Reports on file with this Court and the records of the Plaintiff. This tabulation does not take into account additions or subtractions from any Allowed Pumping Allocation of a producer for the 1978-79 water year, nor other adjustments not representing change in fee title to water rights, such as leases of water rights, nor does it include the names of lessees of landowners where the lessees are exercising the water rights. The exercise of all water rights is subject, however, to the provisions of this Judgment as hereinafter contained. All of said rights are of the same legal force and effect and are without priority with reference to each other. Each party whose name is hereinafter set forth in the tabulation set forth in Appendix "2" of this judgment, and after whose name there appears under the column "Total Water Right" the figure "0" owns no rights to extract any ground water from Central Basin, and has no right to extract any ground water from Central Basin.

(b) Defendant The City of Los Angeles is the owner of the right to extract fifteen thousand (15,000) acre feet per annum of ground water from Central Basin. Defendant Department

of Water and Power of the City of Los Angeles has no right to extract ground water from Central Basin except insofar as it has the right, power, duty or obligation on behalf of defendant The City of Los Angeles to exercise the water rights in Central Basin of defendant The City of Los Angeles. The exercise of said rights are subject, however, to the provisions of this judgment hereafter contained, including but not limited to, sharing with other parties in any subsequent decreases or increases in the quantity of extractions permitted from Central Basin, pursuant to continuing jurisdiction of the Court, on the basis that fifteen thousand (15,000) acre feet bears to the Allowed Pumping Allocations of the other parties.

(c) No party to this action is the owner of or has any right to extract ground water from Central Basin except as herein affirmatively determined.

2. Parties Enjoined as Regards Quantities of Extractions.

(a) Each party, other than The State of California and The City of Los Angeles and Department of Water and Power of The City of Los Angeles, is enjoined and restrained in any Administrative year commencing after the date this judgment becomes final from extracting from Central Basin any quantity of Water greater than the party's Allowed Pumping Allocation as hereinafter set forth next to the name of the party in the tabulation appearing in Appendix 2 at the end of this Judgment, subject to further provisions of this judgment. Subject to such further provisions, the officials, agents and employees of The State of California are enjoined and restrained in any such Administrative year from extracting from Central Basin collectively any quantity of water

greater than the Allowed Pumping Allocation of The State of California as hereinafter set forth next to the name of that party in the same tabulation. Each party adjudged and declared above not to be the owner of and not to have the right to extract ground water from Central Basin is enjoined and restrained in any Administrative year commencing after the date this judgment becomes final from extracting any ground water from Central Basin, except as may be hereinafter permitted to any such party under the Exchange Pool provisions of this judgment.

(b) Defendant The City of Los Angeles is enjoined and restrained in any Administrative year commencing after the date this judgment becomes final from extracting from Central Basin any quantity of water greater than fifteen thousand (15,000) acre feet, subject to further provisions of this judgment, including but not limited to, sharing with other parties in any subsequent decreases or increases in the quantity of extractions permitted from Central Basin by parties, pursuant to continuing jurisdiction of the Court, on the basis that fifteen thousand (15,000) acre feet bears to the Allowed Pumping Allocations of the other parties. Defendant Department of Water and Power of The City of Los Angeles is enjoined and restrained in any Administrative year commencing after the date this judgment becomes final from extracting from Central Basin any quantity of water other than such as it may extract on behalf of defendant The City of Los Angeles, and which extractions, along with any extractions by said City, shall not exceed that quantity permitted by this judgment to that City in any Administrative year. Whenever in this judgment the term "Allowed Pumping

Allocation" appears, it shall be deemed to mean as to defendant The City of Los Angeles the quantity of fifteen thousand (15,000) acre feet.

Name [2]	Total Water Right	Allowed Pumping Allocation
J. P. Abbott, Inc.	21	17
Charles E. Adams (Corty Van Dyke, tenant) (see additional listing below for Charles E. Adams)	8	6
Charles E. Adams and Rhoda E. Adams	5	4
Juan Aguayo and Salome Y. Aguayo	1	1
Aguiar Dairy, Inc.	33	26
Airfloor Company of California, Inc.	1	1
J. N. Albers and Nellie Albers	98	78
Jake J. Alewyn and Mrs. Jake J. Alewyn aka Normalie May Alewyn (see listing under name of Victor E. Gamboni)		
Tom Alger and Hilda Alger	9	7
Clarence M. Alvis and Doris M. Alvis	0	0
American Brake Shoe Company	52	42

[2]Parties and Rights as originally adjudicated

Name	Total Water Right	Allowed Pumping Allocation
American Pipe and Construction Co.	188	150
Anaconda American Brass Company	0	0
Gerrit Anker (see listing under name of Agnes De Vries		
Archdiocese of Los Angeles Education & Welfare Corporation	8	6
George W. Armstrong and Ruth H. Armstrong (Armstrong Poultry Ranch, tenant)	28	22
Artesia Cemetery District	30	24
Artesia Milling Company (see listing under name of Dick Zuidervaart)		
Artesia School District	51	41
Arthur Land Co., Inc.	13	10
Charles Arzouman and Neuart Arzouman	1	1
Associated Southern Investment Company (William R. Morris, George V. Gutierrez and Mrs. Socorro Gutierrez, tenants and licensees)	16	13
The Atchison, Topeka and Santa Fe Railway Co.	124	99
Atkinson Brick Company	11	9
Arthur Atsma (see listing under name of Andrew De Voss)		
B.F.S. Mutual Water Company	183	146
Henry Baar (see listing under name of Steve Stefani, Sr.)		
Vernon E. Bacon (see listing under name of Southern California Edison Company)		

Name	Total Water Right	Allowed Pumping Allocation
Adolph Bader and Gesine Bader (Fred Bader, tenant)	14	11
K. R. Bailey and Virginia R. Bailey	1	1
Dave Bajema (see listing under name of Peter Dotinga)		
Donald L. Baker and Patsy Ruth Baker	5	4
Allen Bakker	0	0
Sam Bangma and Ida Bangma	17	14
Bank of America National Trust and Savings Association, as Trustee of Trust created by Will of Tony V. Freitas, Deceased (Frank A. Gonsalves, tenant)	29	23
Emma Barbaria, as to undivided 1/2 interest; John Barbaria, Jr. and Lorraine Barbaria as to undivided 1/4 interest; and Frank Barbaria as to undivided 1/4 interest (John Barbaria & Sons Dairy, tenant)	27	22
Antonio B. Barcellos and Manuel B. Barcellos	12	10
John Barcelos and Guilhermina Barcelos	16	13
Sam Bartsma and Birdie Bartsma	34	27
Bateson's School of Horticulture, Inc. (see listing under name of John Brown Schools of California, Inc.)		
Bechard Mutual Water Corporation	4	4
Beck Tract Water Company, Inc.	29	23
Iver F. Becklund	1	1
Margaret E. Becklund	1	1
P. T. Beeghly (International Carbonic, Inc., tenant)	1	1
Doutzen Bekendam and Hank Bekendam	0	0
John Bekendam	0	0
Tillie Bekendam	0	0

Name	Total Water Right	Allowed Pumping Allocation
Bell Trailer City (see listing under name of Bennett E. Simmons)	1	1
E. F. Bellenbaum and Marie P. Bellenbaum	32	26
Bellflower Christian School	243	194
Bellflower Home Garden Water Company	111	89
Bellflower Unified School District	2,109	1,687
Bellflower Water Company	11	9
Belmont Water Association	0	0
Tony Beltman	0	0
Berlu Water Company, Inc.	32	26
Jack R. Bettencourt and Bella Bettencourt	151	121
Bigby Townsite Water Co.		
Siegfried Binggeli and Trina L. Binggeli (see listing under name of Paul H. Lussman, Jr.)	0	0
Fred H. Bixby Ranch Company		
Delbert G. Black and Lennie O. Black as to undivided one-half; and Harley Lee, as to undivided one-half	40	32
Bloomfield School District	11	9
Adrian Boer and Julia Boer	5	4
Gerard Boere and Rosalyn Boer		
Henry Boer and Annie Boer (William Offinga & Son, including Sidney Offinga, tenants as to 33 acre feet of water right and 26 acre feet of allowed pumping allocation)	34 30	27 24
John Boere, Jr. and Mary J. Boere	30	24
John Boere, Sr. and Edna Boere (John Boere, Jr., tenant)	30	24
John Boere, Jr. (see also listing under name of Leonard A. Grenier)		

Name	Total Water Right	Allowed Pumping Allocation
Frank Boersma and Angie Boersma	31	25
Gerrit Boersma and Jennie Boersma (George Boersma, tenant)	8	6
Jack Boersma	0	0
Sam Boersma and Berdina Boersma	42	34
Jan Bokma (see listing under name of August Vandenberg)		
Jacob Bollema	0	0
James C. Boogerd (see listing under name of Jake Van Leeuwen, Jr.)		
Bernard William Bootsma, Carrie Agnes Van Dam and Gladys Marie Romberg	12	10
Michel Bordato and Anna M. Bordato (Charlie Vander Kooi, tenant)	12	10
John Borges and Mary Borges, aka Mrs. John Borges (Manuel B. Ourique, tenant)	14	11
Mary Borges, widow of Manuel Borges (Manuel Borges, Jr., tenant)	7	6
Gerrit Bos and Margaret Bos	88	70
Jacob J. Bosma (see listing under name of Sieger Vierstra)		
Peter Bothof	6	5
William Bothof and Antonette Bothof	7	6
Frank Bouma and Myron D. Kolstad	3	3
Ted Bouma and Jeanette Bouma	21	17
Sam Bouman (Arie C. Van Leeuwen, tenant)	8	6
John Brown Schools of California, Inc. (Bateson's School of Horticulture, Inc., tenant)	2	2
M. J. Brown, Jr. and Margaret Brown	0	0
Adrian Bulk and Alice Bulk	20	16

Name	Total Water Right	Allowed Pumping Allocation
Duke Buma and Martha Buma	8	6
Miles A. Burson and Rose Burson	7	6
Calavar Corporation (see listing under name of H R M Land Company)		
California Cotton Oil Corporation	101	81
California Portland Cement Company	0	0
California Rendering Company, Ltd.	149	119
California Water and Telephone Company	2,584	2,067
California Water Service Company (Base Water Right - 13,477)	14, 717	11,774
Candlewood Country Club	184	147
V. Capovilla and Mary Capovilla	0	0
Carmenita School District	9	7
Carson Estate Company	139	111
Paul Carver	0	0
Catalin Corporation of America	13	10
Center City Water Co.	86	69
Central Manufacturing District, Inc. (Louis Guglielmana and Richard Wigboly, tenants)	825	660
Century Center Mutual Water Association	317	254
Century City Mutual Water Company, Ltd.	62	50
Cerritos Junior College District	119	95
Cerritos Park Mutual Water Company	77	62
Challenge Cream & Butter Association	146	117
Chansall Mutual Water Company	101	81
Maynard W. Chapin, as Executor of the Estate of Hugh L. Chapin, deceased	36	29

Name	Total Water Right	Allowed Pumping Allocation
Cherryvale Water Users' Association	14	11
Shigeru Chikami and Jack Chikami doing business as Chikami Bros. Farming (see also listing under name of Southern California Edison Company)	10	8
John Christoffels and Effie Christoffels	14	11
Citrus Grove Heights Water Company	277	222
City Farms Mutual Water Company No. 1	37	30
City Farms Mutual Water Company No. 2	15	12
City of Artesia	30	24
City of Bellflower	60	48
City of Compton	6,511	5,209
City of Downey	5,713	4,570
City of Huntington Park	4,788	3,830
City of Inglewood (Base Water Right - 629)	1,118	894
City of Lakewood	10,631	8,505
City of Long Beach (Base Water Right - 29,876)	33,538	26,830
City of Los Angeles (see paragraph 2 above of this Part I for water rights and restrictions on the exercise thereof of said defendant. See also such reference with respect to Department of Water and Power of the City of Los Angeles.)		
City of Lynwood	6,238	4,990
City of Montebello	260	208
City of Norwalk	613	490
City of Santa Fe Springs	505	404
City of Signal Hill	1,675	1,340

Name	Total Water Right	Allowed Pumping Allocation
City of South Gate	9,942	7,954
City of Vernon	9,008	7,206
City of Whittier	776	621
Allan Clanton and Ina Clanton	80	64
Claretian Jr. Seminary (see listing under name of Dominguez Seminary)		
Dr. Russell B. Clark (see listing under name of Research Building Corporation)		
Jacob Cloo and Grace Cloo	16	13
Clougherty Packing Company	80	64
Coast Packing Company	426	341
Coast Water Company	588	470
Joe A. Coelho, Jr. and Isabel Coelho	5	4
J. H. Coito, Jr.	0	0
John H. Coito and Guilhermina Coito (Zylstra Bros., a partnership consisting of Lammert Zylstra and William Zylstra, tenant)	17	14
J. E. Collinsworth	15	12
Compton Union High School District	48	38
Conservative Water Company (Base Water Right - 4,101)	133	3,306
Container Corporation of America	323	1,058
Nicholas C. Contoas and P. Basil Lambros (Vehicle Maintenance & Painting Corporation, tenant)	1	1
Continental Can Company, Inc.	946	757
Contractors Asphalt Products Company, Inc.	16	13
R. M. Contreras	8	6

Name	Total Water Right	Allowed Pumping Allocation
Copp Equipment Company, Inc. and Humphries Investments Incorporated	7	6
Mary Cordeiro and First Western Bank & Trust Company, as Trustee pursuant to last will and testament of Tony Cordeiro, deceased	46	37
Corporation of the Presiding Bishop of the Church of Jesus Christ of Latter Day Saints (Ray Mitchell, tenant)	39	31
Harry Lee Cotton and Doris L. Cotton	5	4
County of Los Angeles	737	590
County Water Company	280	224
Cowlitz Amusements, Inc. (La Mirada Drive-In Theater, tenant)	4	4
Pete Coy	28	22
Crest Holding Corporation	20	16
Katherine M. Culbertson	2	2
Orlyn L. Culp and Garnetle Culp	21	17
Everett Curry and Marguerite Curry	2	2
D. V. Dairy (see listing under name of Frank C. Leal)		
Dairymen's Fertilizer Co-op, Inc.	1	1
Noble G. Daniels (see listing under name of Harold Marcroft)		
John A. Davis	0	0
Henry De Bie, Jr. and Jessie De Bie	17	14
Clifford S. Deeth	0	0
Ernest De Groot and Dorothy De Groot	81	65
Pete de Groot	15	12
Pier De Groot and Fay De Groot	21	17

Name	Total Water Right	Allowed Pumping Allocation
Martin De Hoog and Adriana De Hoog	12	10
Edward De Jager and Alice De Jager	37	30
Cornelius De Jong and Grace De Jong	13	10
Jake De Jong and Lena De Jong (Frank A. Gonsalves, tenant as to 8 acre-feet of water right)	21	17
William De Kriek (see listing under name of Gerrit Van Dam)		
Del Amo Dairy (see listing under name of Ed Haakma)		
Del Amo Estate Company	0	0
Joe De Marco and Concetta De Marco	1	1
Louis F. De Martini (see listing under name of Southern California Edison Company)		
Mary A. De Mello	16	13
John Den Hollander (see listing under name of James Dykstra)		
Department of Water and Power of The City of Los Angeles, by reason of charter provisions, has the management and control of water rights owned by the City of Los Angeles (see listing under name of City of Los Angeles)		
Ruth E. Dever (Orange County Nursery, Inc., tenant)	0	0
Andrew De Voss and Alice De Voss (Arthur De Voss and Arthur Atsma, tenants)	36	29
Agnes De Vries (Gerrit Anker, tenant)	16	13
Dick De Vries and Theresa De Vries	10	8
Gerrit De Vries and Claziena De Vries	18	14
Gerrit Deyager and Dena Deyager	0	0

Name	Total Water Right	Allowed Pumping Allocation
Lloyd W. Dinkelspiel, Jr. (see listing under name of Florence Hellman Ehrman)		
District VII, Division of Highways of the State of California Department of Public Works (see listing under name of State of California)		
Dominguez Estate Company	0	0
Dominguez Seminary and Claretian Jr. Seminary	111	89
Dominguez Water Corporation	8,012	6,410
Peter Dotinga and Tena Dotinga (Dave Bajema, tenant)	9	7
Robert L. Dougherty	0	0
Downey Cemetery District	21	17
Downey Fertilizer Co. (see listing under name of Downey Land Company)		
Downey Land Company (Downey Fertilizer Co., tenant)	101	81
Downey Valley Water Company	87	70
Jim Drost	0	0
James Dykstra and Dora Dykstra (John Den Hollander, tenant)	6	5
John Dykstra and Wilma Dykstra	52	42
Cor Dyt and Andy Dyt	6	5
Eagle Picher Company	141	113
Gail H. Eagleton	67	54
Florence Hellman Ehrman; I. W. Hellman, Jr.; Frederick J. Hellman; Marco F. Hellman; Clarence E. Heller; Alfred Heller, Elizabeth Heller; Clarence E. Heller, Elinor R. Heller and Wells Fargo Bank, as co-executors of the Estate of Edward H. Heller, deceased; Lloyd W. Dinkelspiel, Jr., William H.		

Name	Total Water Right	Allowed Pumping Allocation
Green and Wells Fargo Bank, as co-executors of the Estate of Lloyd W. Dinkelspiel, deceased; Wells Fargo Bank, as Trustee under the trust created by the Will of Florence H. Dinkelspiel, deceased. (Union Oil Company of California, Lessee as to 190 acre-feet of right and as to 152 acre-feet of allowed pumping allocation)	555	444
El Rancho Unified School District	69	55
Berton Elson (see listing under name of D. P. Winslow)		
John H. Emoto and Shizuko Emoto	0	0
Addie L. Enfield (see listing under name of James L. Stamps)		
John W. England and Consuello England (see listing under name of Jenkins Realty Mutual Water Co.)		
Emma Engler (Morris Weiss, tenant)	10	8
Anthony F. Escobar and Eva M. Escobar (Henry Kampen, tenant)	14	11
Excelsior Union High School District	381	305
Kenneth A. Farris and Wanda Farris	1	1
Federal Ice and Cold Storage Company	92	74
Fred Fekkes (see listing under name of Steve Stefani, Sr.)		
Julius Felsenthal and Mrs. Julius Felsenthal, aka Marga Felsenthal	1	1
Tony Fernandes (see listing under name of U. Stewart Jones)		
Joe C. Ferreira and Carolina Ferreira (Joe C. Ferreira and Joe C. Ferreira, Jr., operators of well facility)	37	30

Name	Total Water Right	Allowed Pumping Allocation
Mary A. Ferreira (Joe Lucas, tenant) (see also listing under name of Jack Gonsalves)	1	1
John Feuz, Jr.	0	0
Fibreboard Paper Products Corporation	1,521	1,217
Abe Fien	0	0
Alfred Fikse, Jr. and Aggie Fikse	2	2
Henry Fikse and Jennie Fikse	4	4
Filtrol Corporation	570	456
The Firestone Tire & Rubber Co.	1,536	1,229
First Western Bank & Trust Co. (see listing under name of Mary Cordeiro)		
Clare Fisher	0	0
Elizabeth Flesch, James Flesch, Margaret Flesch, Theodore Flesch, Ernest D. Roth and Eva Roth, doing business as Norwalk Mobile Lodge	18	14
The Flintkote Company	2,567	2,054
Ford Motor Company	11	9
Robert G. Foreman (see listing under name of Lakewood Pipe Co.)		
Guiseppi Franciosi and Alice Franciosi	2	2
Tony V. Freitas (see listing under name of Bank of America, etc.)		
S. Fujita	0	0
Jun Fukushima (see listing under name of Chige Kawaguchi)		
Paul Fultheim and Helga Fultheim	5	4
Fumi Garden Farms, Inc. (see listing under name of Southern California Edison Company and also under name of George Yamamoto)		

Name	Total Water Right	Allowed Pumping Allocation
Gabby Louise, Inc. (Arthur Gilbert & Associates, tenant)	58	46
Victor E. Gamboni and Barbara H. Gamboni (Jake J. Alewyn and Mrs. Jake J. Alewyn also known as Normalie May Alewyn, tenants as to 13 acre feet of water right and 10 acre feet of allowed pumping allocation)	27	22
Nick Gandolfo and Palmera Gandolfo	5	4
Freddie A. Garrett and Vivian Marie Garrett	6	5
Martha Gatz	15	12
General Dynamics Corporation	675	540
General Telephone Company of California	2	2
Alfred Giacomi and Jennie Giacomi	58	46
Arthur Gilbert & Associates (see listing under name of Gabby Louise Inc.)		
Mary Godinho	0	0
Pauline Godinho (Joe C. Godinho and John C. Godinho, Jr., doing business as Godinho Bros. Dairy, tenants)	31	25
Harry N. Goedhart, Henry Otto Goedhart, Hilbrand John Goedhart, John Goedhart, Otto Goedhart, Jr., Peter Goedhart, and Helen Goedhart Van Eik (Paramount Farms, tenant)	21	17
Reimer Goedhart	12	10
Golden Wool Company	223	178
Albert S. Gonsalves and Caroline D. Gonsalves	10	8
Frank A. Gonsalves (see listing under name of Bank of America National Trust and Savings Association, etc.; and also under name of Jake De Jong)		

Name	Total Water Right	Allowed Pumping Allocation
Jack Gonsalves, Joe Lucas, Pete Koopmans, Manuel M. Souza, Sr., Manuel M. Souza, Jr., Frank M. Souza, Louie J. Souza, and Mary A. Ferreira	55	44
Jack Gonsalves and Mary Gonsalves	31	25
Joaquin Gonsalves and Elvira Gonsalves	27	22
Joe A. Gonsalves and Virginia Gonsalves	12	10
The B. F. Goodrich Company	519	415
The Goodyear Tire & Rubber Company	1,141	913
Eric Gorden and Hilde Gorden	2	2
Fern Ethyl Gordon as to an undivided 1/2 interest; Fay G. Tawzer and Lawrence R. Tawzer, as to an undivided 1/2 interest	17	14
Huntley L. Gordon (appearing by and through United California Bank, as Conservator of the Estate of Huntley L. Gordon)	41	33
Robert E. Gordon	5	4
Joe Gorzeman and Elsie Gorzeman	13	10
Florence M. Graham	7	6
Marie Granger	0	0
Great Western Malting Company	448	358
William H. Green (see listing under name of Florence Hellman Ehrman)		
Greene-Howard Petroleum Corporation (see listing under name of Hathaway Company)		
John H. Gremmius and Henry W. Gremmius dba Henry and John Gremmius	0	0
Leonard A. Grenier and Marie Louise Grenier (John Boere, Jr., tenant)	10	8
Florence Guerrero	2	2

Name	Total Water Right	Allowed Pumping Allocation
Louis Guglielmana (see listing under name of Central Manufacturing District, Inc.)		
George V. Gutierrez and Mrs. Socorro Gutierrez (see listing under name of Associated Southern Investment Company)		
Salvatore Gutierrez (see listing under name of Southern California Edison Company)		
H. J. S. Mutual Water Co.	63	50
H R M Land company (Harron, Rickard & McCone Company of Southern California and Calavar Corporation, tenants)	3	3
Gerrit Haagsma and Mary Haagsma	10	8
Ed Haakma and Sjana Haakma (Del Amo Dairy, tenant; Ed Haakma and Pete Vander Kooi, being partners of said Del Amo Dairy)	28	22
Verney Haas and Adelyne Haas	4	4
William H. Hadley and Grace Hadley	4	4
Henry C. Haflinger and Emily Haflinger	10	8
Clarence Theodore Halburg	3	3
Fred Hambarian	2	2
Henry Hamstra and Nelly Hamstra	33	26
Raymond Hansen and Mary Hansen	12	10
Earl Haringa; Evert Veenendaal and Gertrude Veenendaal	22	18
Antoine Harismendy and Claire Harismendy	0	0
Harron, Rickard & McCone Company of Southern California (see listing under name of H R M Land Company)		
Jack D. Hastings	0	0
Kameko Hatanaka	9	7

Name	Total Water Right	Allowed Pumping Allocation
Kazuo Hatanaka (Minoru Yoshijima, tenant)	10	8
Masakazu Hatanaka, Isao Hatanaka, and Kenichi Hatanaka	5	4
Mrs. Motoye Hatanaka	0	0
Hathaway Company, Richard F. Hathaway, Julian I. Hathaway, and J. Elwood Hathaway (Greene-Howard Petroleum Corporation, tenant utilizing less than 1 acre foot per year)	70	56
Clarence E. Heller; Alfred Heller; Elizabeth Heller; Clarence E. Heller; Elinor R. Heller, as co-executors of the Estate of Edward H. Heller, deceased (see listing under name of Florence Hellman Ehrman)		
I. W. Hellman, Jr.; Frederick J. Hellman; Marco F. Hellman (see listing under name of Florence Hellman Ehrman)		
Ralph Hicks	0	0
Alfred V. Highstreet and Evada V. Highstreet	10	8
John Highstreet and Eileen M. Highstreet	9	7
Bob Hilarides and Maaike Hilarides (Frank Hilarides, tenant)	51	41
John Hilarides and Maria Hilarides	26	21
Hajime Hirashima (see listing under name of Masaru Uyeda)		
Willis G. Hix	1	1
Henry H. Hoffman and Apolonia Hoffman	12	10
Dick Hofstra	0	0
Andrew V. Hohn and Mary G. Hohn	1	1
Kyle R. Holmes and Grace Ellen Holmes	20	16
Home Water Company	35	28

Name	Total Water Right	Allowed Pumping Allocation
Manuel L. Homen	17	14
Mrs. Paul Y. Homer (see listing under name of Mrs. Paul Y. Homer (King).)		
Cornelis Hoogland and Alice Hoogland	15	12
Art Hop, Jr.	0	0
Art Hop, Sr. and Johanna Hop (G. A. Van Beek, tenant)	5	4
Andrew Hop, Jr. and Muriel Hop	33	26
Theodore R. Houseman and Leona M. Houseman	14	11
Humphries Investments Incorporated (see listing under name of Copp Equipment Company, Inc.)		
Albert Huyg and Marie Huyg	22	18
Hygenic Dairy Farms, Inc.	0	0
Pete W. Idsinga and Annie Idsinga	13	10
Miss Alice M. Imbert	1	1
Industrial Asphalt of California, Inc.	116	93
Inglewood Park Cemetery Association	285	228
International Carbonic, Inc. (see listing under name of P. T. Beeghly)		
Jugora Ishii and Mumeno Ishii (Ishii Brothers, tenant)	10	8
Robert J. Jamison and Betty Jamison	7	6
Jenkins Realty Mutual Water Co. (Clyde H. Jenkins, Minnie R. Jenkins, Mary Wilcox, Ruby F. Marchbank, Robert B. Marchbank, John W. England, and Consuello England, shareholders	10	8
John-Wade Co.	1	1
Henry S. Jones and Madelynne Jones	1	1

Name	Total Water Right	Allowed Pumping Allocation
U. Stewart Jones and Dorothy E. Jones (Tony Fernandes, tenant)	1	1
Harold Jongsma and Mary N. Jongsma	65	52
W. P. Jordan (see listing under name of Henry Van Ruiten)		
Dave Jorritsma and Elizabeth Jorritsma	27	22
Christine Joseph (see listing under name of Helen Wolfsberger)		
Junior Water Co., Inc.	737	590
Kal Kan Foods, Inc.	120	96
Kalico, Inc.	4	4
Hagop Kalustian (11 acre feet of total water right attributable to well located at 6629 South Street, Lakewood and reported to plaintiff under Producer No. 3925. 2 acre feet of total water right attributable to portion of property not sold to State of California formerly served by well located at 10755 Artesia Blvd., Artesia, the production of which well was reported to plaintiff under Producer No. 4030)	13	10
Fritz Kampen and Clare Kampen	14	11
William Kamstra and Bertha Kamstra	35	28
Henry Kampen (see listing under name of Anthony Escobar)		
L. Kauffman Company, Inc. (see listing under name of Lorraine K. Meyberg)		
Chige Kawaguchi and Masao Kawaguchi (Jun Fukushima, tenant)	4	4
King Kelley Marmalade Co. (see listing under name of Roberta M. Magnusson)		
Mrs. Paul Y. Homer (King)	17	14
Jacob R. Kimm and Bonnie Kimm	36	29

Name	Total Water Right	Allowed Pumping Allocation
Mrs. Oraan Kinne (Nicholaas J. Moons, tenant)	11	9
Morris P. Kirk & Son, Inc.	77	62
Jake Knevelbaard and Anna Knevelbaard	50	40
Willie Knevelbaard and Joreen Knevelbaard	1	1
Simon Knorringa	12	10
John Koetsier, Jr.	0	0
Myron D. Kolstad (see listing under name of Frank Bouma)		
Yoshio Kono and Barbara Kono (see listing under name of George Mimaki)		
Louis Koolhaas	13	10
Simon Koolhaas and Sophie Grace Koolhaas	9	7
Pete Koopmans (see listing under name of Jack Gonsalves)		
Nick P. Koot (see listing under name of Mary Myrndahl)		
Kotake, Inc. (Masao Kotake, Seigo Kotake, William Kotake, dba Kotake Bros., tenants)	83	66
Masao Kotake	0	0
Walter G. Kruse and Mrs. Walter G. Kruse, aka Vera M. Kruse	11	9
Laguna-Maywood Mutual Water Company No. 1	1,604	1,283
La Habra Heights Mutual Water Company	3,044	2,435
La Hacienda Water Company	46	37
Lakewood Pipe Co., a partnership composed of Robert G. Foreman, Frank W. Tybus and June E. Tybus (Lakewood Pipe Service Co., tenant)	12	10

Name	Total Water Right	Allowed Pumping Allocation
P. Basil Lambros (see listing under name of Nicholas C. Conteas)		
La Mirada Drive-in Theater (see listing under name of Cowlitz Amusements, Inc.)		
La Mirada Water Company	0	0
Calvin E. Langston and Edith Langston	1	1
S. M. Lanting and Alice Lanting	15	12
Henry Lautenbach and Nellie H. Lautenbach	16	13
Norman Lautrup, as Executor of the Estate of Nels Lautrup, deceased; and Minnie Margaret Lautrup	30	24
Frank C. Leal and Lois L. Leal (D. V. Dairy, tenant)	15	12
Eugene O. LeChasseur and Lillian P. LeChasseur (R. A. LeChasseur, tenant)	2	2
Lee Deane Products, Inc.	0	0
Harley Lee (see listing under name of Delbert G. Black)		
Le Fiell Manufacturing Company	0	0
Armand Lescoulie (see listing under name of Southern California Edison Company)		
Liberty Vegetable Oil Company	14	11
Little Lake Cemetery District	17	14
Little Lake School District	0	0
Loma Floral Company (see listing under name of George Mimaki)		
Melvin L. Long and Stella M. Long	2	2
Nick J. Loogman (see listing under name of William Smoorenburg)		
Frank Lorenz (see listing under name of Ralph Oosten)		

Name	Total Water Right	Allowed Pumping Allocation
Los Angeles County Waterworks District No. 1 (Base Water Right 22)	113	90
Los Angeles County Waterworks District No. 10	842	674
Los Angeles County Waterworks District No. 16	412	330
Los Angeles Paper Box and Board Mills	321	257
Los Angeles Union Stockyards Company	0	0
Los Nietos Tract 6192 Water Co.	49	39
Alden Lourenco (see listing under name of A. C. Pinheiro)		
Lowell Joint School District	0	0
Joe Lucas (see listings under names of Mary A. Ferreira and Jack Gonsalves)		
Luer Packing Co. (see listing under name of Sam Perricone)		
Jake J. Luetto (Orange County Nursery, Inc., tenant)	13	10
Lunday-Thagard Oil Co.	265	212
Joe Luond (Frieda Roethlisberger, tenant as to portion of rights)	7	6
John Luscher and Frieda Luscher	13	10
Paul H. Lussman, Jr. and Ann Lussman, Siegfried Binggeli and Trina L. Binggeli (Paul's Dairy, tenant)	8	6
Lynwood Gardens Mutual Water Company	205	164
Lynwood Park Mutual Water Company	278	222
Jerome D. Mack and Joyce Mack (see listing under name of D. S. Moss)		
Roberta M. Magnusson (King Kelly Marmalade Co., tenant)	15	12
Anthony Mancebo	0	0

Name	Total Water Right	Allowed Pumping Allocation
Robert B. Marchbank and Ruby F. Marchbank (see listing under name of Jenkins Realty Mutual Water Co.)		
Harold Marcroft and Marjorie Marcroft (Noble G. Daniels, tenant)	7	6
Floyd G. Marcusson (see listing under name of Sykes Realty Co.)		
Walter Marlowe and Edna Marlowe	1	1
Marshburn, Inc. (see listing under name of Mel, Inc.)		
The Martin Bros. Container & Timber Products Corp.	7	6
Mary Martin	35	28
Antonio Mathias and Mary Mathias	16	13
Mausoleum Park, Inc. and Sun Holding Corporation	4	4
Maywood Mutual Water Company No. 1	926	741
Maywood Mutual Water company No. 2	1,007	806
Maywood Mutual Water Company No. 3	1,407	1,126
Mel, Inc. (Marshburn, Inc., tenant)	67	54
G. Mellano	12	10
Wilbur Mellema and Mary Mellema (see listing under name of Elmo D. Murphy)		
Wilbur Mellema (see listing under name of Morris Weiss)		
Memorial Parks, Inc.	42	34
Lyman B. Merrick and Gladys L. Merrick	17	24
Metropolitan State Hospital of the State of California Department of Mental Hygiene (see listing under name of State of California)		
F. N. Metzger	0	0

Name	Total Water Right	Allowed Pumping Allocation
Lorraine K. Meyberg (L. Kauffman Company, Inc., tenant)	81	65
Midland Park Water trust	71	57
Midway Gardens Mutual Association	59	47
Harry C. Miersma and Dorothy L. Miersma	12	10
Henry Miersma and Susan M. Miersma	7	6
Willis L. Miller	0	0
George Mimaki, Mitsuko Mimaki, Yoshio Kono and Barbara Kono (Loma Floral Company, tenant)	2	2
Ray Mitchell (see listing under name of Corporation of the Presiding Bishop of the Church of Jesus Christ of Latter Day Saints; and also listing under name of Frank Ruggieri)		
Fumiko Mitsuuchi, aka Mary Mitsuuchi (Z. Van Spanje, tenant as to one acre foot)	14	11
Yoneichi Miyasaki	0	0
Glenn Miyoshi, Yosaku Miyoshi, Masayo Miyoshi, Haruo Miyoshi, and Masaru Miyoshi, dba Miyoshi Bros.	10	8
Jean Mocho and Michel Plaa	11	9
Modern Imperial Company	71	57
Montebello Land and Water Company	1,990	1,592
Monterey Acres Mutual Water Company	128	102
Nicholaas J. Moons (see listing under name of Mrs. Oraan Kinne)		
Alexander Moore and Betty L. Moore	16	13
Neal Moore	0	0
Alyce Mooschekian	0	0
Reuben Mooschekian	15	12

Name	Total Water Right	Allowed Pumping Allocation
William R. Morris (see also listing under name of Associated Southern Investment Company)	1	1
D. S. Moss, Lillian Moss, Jerome D. Mack, and Joyce Mack	5	4
Mountain View Dairies, Inc.	68	54
Kiyoshi Murakawa and Shizuko Murakawa	0	0
Daisaku Murata, Fui Murata, Hatsuye Murata, Kenji Murata, Setsuko Murata, and Takeo Murata	15	12
Kenji Murata (see listing under name of Southern California Edison Company)		
Elmo D. Murphy and Evelene B. Murphy (Morris Weiss, Bessie Weiss, Wilbur Mellema, and Mary Mellema, tenants)	23	18
Murphy Ranch Mutual water company	576	461
Etta Murr	3	3
R. B. Murray and Gladys J. Murray	0	0
Tony G. Mussachia and Anna M. Mussachia	10	8
Mary Myrndahl (Nick P. Koot, tenant)	11	9
Sam Nakamura and Tokiko Nakamura	2	2
Leo Nauta (see listing under name of John Osinga)		
Pete Nauta (see listing under name of Jacob Vandenberg)		
Fred C. Nelles School for Boys of the State of California Department of the Youth Authority (see listing under name of State of California)		
Otelia Nelson and Robert Nelson (Shelter Superior Dairy, tenant)	14	11
Simon S. Niekerk and Rose Niekerk (Niekerk Hay Company, tenant)	3	3

Name	Total Water Right	Allowed Pumping Allocation
Norris-Thermador Corporation	172	138
North Gate Gardens Water Co.	60	48
Norwalk-La Mirada City School District	360	288
Norwalk Mobile Lodge (see listing under name of Elizabeth Flesch)		
Mabel E. Nottingham (Leslie Nottingham, tenant)	25	20
William Offinga & Son, including Sidney Offinga (see listing under name of Henry Boer)		
Olive Lawn Memorial Park, Inc.	14	11
John Oord	0	0
Marinus Oosten and Anthonia Oosten	16	13
Ralph Oosten and Caroline Oosten (Frank Lorenz, tenant as to 13 acre feet of water right and 10 acre feet of allowed pumping allocation)	51	41
Orange County Nursery, Inc. (see also: listing under name of Ruth E. Dever; listing under name of Jake J. Luetto; and listing under name of Mary Ravera)	16	13
Orchard Dale County Water District (Base Water Right - 1,382)	1,384	1,107
Orchard Park Water Club, Inc.	50	40
Oriental Foods, Inc.	34	27
Orla Company (John D. Westra, tenant)	7	6
Viva Ormonde (see listing under name of Hank Van Dam)		
Pablo Oropeza and Aurelia G. Oropeza (Pablo Oropeza, Jr., tenant) (see also listing under name of Tarr and McComb Oil Company, Ltd.)		
John Osinga (Leo Nauta, tenant)	6	5

Name	Total Water Right	Allowed Pumping Allocation
Manuel B. Ourique (see listing under name of John Borges)		
Owl Constructors	20	16
Pacific Electric Railway Company (Gerrit Van Leeuwen of 15405 Shoemaker Road, Norwalk, tenant as to 11 acre feet of right and 9 acre feet of allowed pumping allocation)	15	12
Packers Mutual Water Company	43	34
Edward G. Paddison and Grace M. Paddison	17	14
Paramount Farms (see listing under name of Harry N. Goedhart)		
Paramount County Water District	2,967	2,374
Paramount Unified School District	58	46
Park Water Company	24,592	19,674
W. J. Parsonson	0	0
Rudolph Pasma and Frances C. Pasma	10	8
Paul's Dairy (see listing under name of Paul H. Lussman, Jr.)		
Mrs. La Verne Payton	1	1
Peerless Land & Water Co., Inc.	1,232	986
J. C. Pereira, Jr. and Ezaura Pereira	34	27
Sam Perricone and Louis Romoff (Luer Packing Co., tenant)	107	86
Peterson Manufacturing Co., Inc.	73	58
Phelps Dodge Copper Products Corporation	390	312
Pico County Water District	3,741	2.993
Piedmont Heights Water Club	7	6
Lucille C. Pimental (Richard Pimental and Pimental Dairy, tenants)	16	13

Name	Total Water Right	Allowed Pumping Allocation
Joe Pine (see listing under name of A. C. Pinheiro)		
A. C. Pinheiro and Mary M. Pinheiro (Alden Lourenco, tenant as to 9 acre feet of water right and 7 acre feet of allowed pumping right; and Joe Pine, tenant as to 13 acre feet of water right and 10 acre feet of allowed pumping right)	128	102
Fred Pinto and Mary Pinto	5	4
Frank Pires (see listing under name of Frank Simas)		
Tony C. Pires and Laura C. Pires	31	25
Michel Plaa (see listing under name of Jean Mocho)		
Donald R. Plunkett	53	42
Pomering Tract Water Association	32	26
Clarence Pool	24	19
Garret Porte and Cecelia Porte	35	28
Veronica Postma	16	13
C. H. Powell	1	1
Powerine Oil Company	784	627
John Preem	0	0
Ralph Pylman and Ida Pylman	13	10
Quality Meat Packing Company	38	30
Ralphs Grocery Company	0	0
Arthur D. Ramsey and James A. Ramsey	5	4
Rancho Santa Gertrudes Mutual Water System	48	38
Mary Ravera (Orange County Nursery, Inc., tenant	39	31

Name	Total Water Right	Allowed Pumping Allocation
Zelma Ravera	2	2
Rawlins Investment Corporation (Rockview Milk Farms, Inc., tenant)	66	53
Hal Rees	0	0
Reeves Tract Water Company	36	29
Clarence Reinalda	0	0
Reliance Dairy Farms	122	98
Research Building Corporation (Dr. Russell B. Clark, tenant)	11	9
Richfield Oil Corporation	71	57
Richland Farm Water Company	216	173
George Rietkerk and Cornelia Rietkerk	7	6
Rio Hondo Country Club (see listing under name of James L. Stamps)		
Erasmo Rios (see listing under name of Esther Salcido)		
Jesus Rios (see listing under name of Esther Salcido)		
Frank J. Rocha, Jr. and Elsie M. Rocha	13	10
Rockview Milk Farms, Inc. (see listing under name of Rawlins Investment Corporation)		
John Rodrigues, Emily S. Rodrigues, and John Rodrigues, Jr. (see also below)	5	4
John Rodrigues and John Rodrigues Jr.	1	1
Frieda Roethlisberger (see listing under name of Joe Luond)		
Patricia L. Davis Rogers, aka Patricia L. Davis	2	2
The Roman Catholic Archbishop of Los Angeles, a corporation sole	426	341

Name	Total Water Right	Allowed Pumping Allocation
Gladys Marie Romberg (see listing under name of Bernard William Bootsma)		
Alois M. Rombout	0	0
Louis Romoff (see listing under name of Sam Perricone)		
Elvira C. Rosales	3	3
Frank J. Ross	2	2
Ernest D. Roth and Eva Roth (see listing under name of Elizabeth Flesch)		
Ed Roukema	0	0
Herbert N. Royden	31	25
Ruchti Brothers	31	25
Frank Ruggieri and Vada Ruggieri (see additional listing below)	1	1
Frank Ruggieri and Vada Ruggieri; David Seldeen and Fay Seldeen (Ray Mitchell, tenant)	23	18
Thomas S. Ryan and Dorothy J. Ryan	19	15
Sam Rypkema and Tena Rypkema	8	6
St. John Bosco School	53	42
James H. Saito and Yoshino Saito	2	2
Esther Salcido and Jesus Rios (Erasmo Rios, tenant)	3	3
San Gabriel Valley Water Company	6,828	5,462
Joe Santana and Palmira Santana	10	8
Sasaki Bros. Ranch, Inc.	32	26
Sativa L. A. County Water District	592	474
Ben Schilder, Jr. and Anna Schilder	28	22
Carl Schmid and Olga Schmid	18	14

Name	Total Water Right	Allowed Pumping Allocation
Mrs. A. Schuur	0	0
John Schuurman and Isabel Schuurman (James Sieperda, tenant)	15	12
David Seldeen and Fay Seldeen (see listing under name of Frank Ruggieri)		
Maurice I. Sessler	8	6
Chris Shaffer and Celia I. Shaffer	8	6
Shayman & Wharram, a partnership, consisting of John W. Shayman and Francis O. Wharram	2	2
Shell Oil Company (see listing under name of Margaret F. Slusher)		
Shelter Superior Dairy (see listing under name of Otelia Nelson)		
Tadao Shiba and Harume Shiba, Susumu Shiba, and Mitsuko Shiba	7	6
Yahiko Shiozaki and Kiyoko Shiozaki; Ken Shiozaki and Grace Shiozaki	6	5
Shore-Plotkin Enterprises, Inc. (Shore-Calnevar, Inc., tenant)	0	0
J. E. Siemon	15	12
James Sieperda (see listing under name of John Schuurman)		
Sierra Restaurant Corporation	0	0
Frank Simas and Mabel Simas (Frank Pires, tenant)	11	9
Bennett E. Simmons and Alice Lorraine Simmons, George K. Simmons and Doris June Simmons (Bell Trailer City, tenant)	41	33
Margaret F. Slusher (Shell Oil Company, tenant)	7	6
Lester W. Smith and Donald E. Smith (Lester W. Smith Dairy, tenant)	20	16

Name	Total Water Right	Allowed Pumping Allocation
Wirt Smith	14	11
William Smoorenburg and Nick J. Loogman (Smoorenburg & Loogman, a partnership of William Smoorenburg and Nick J. Loogman, operating well facility)	21	17
Leo Snozzi and Sylvia Snozzi	52	42
Socony Mobil Oil Company, Inc.	172	138
Somerset Mutual Water Company	2,744	2,195
South Montebello Irrigation District	1,238	990
Southern California Edison Company (Vernon Bacon; Chikami Bros. Farming, consisting of Jack Chikami and Shigeru Chikami; Louis F. De Martini; Armand Lescoulie; C. D. Webster; Kenji Murata; Glenn F. Spiller and Jean H. Spiller; George Yamamoto and Alice Yamamoto, conducting business as Fumi Garden Farms, Inc.; and Salvatore Gutierrez, tenants and licenses)	816	653
Southern California Water Company	18,937	15,150
Southern Service Company, Ltd.	81	65
Henrietta Southfield	4	4
John Southfield	0	0
Southwest Water Company	2,895	2,316
Manuel M. Souza, Sr.; Manuel M. Souza, Jr.; Frank M. Souza and Louie J. Souza (see listing under name of Jack Gonsalves)		
Nelson Souza and Mary Souza	12	10
Glenn F. Spiller and Jean H. Spiller (see also listing under name of Southern California Edison company)	24	19
Farah Sprague	3	3

Name	Total Water Right	Allowed Pumping Allocation
Herman F. Staat and Charlotte H. Staat	2	2
James L. Stamps, as to an undivided 80% interest; Addie L. Enfield, as to an undivided 20% interest (Rio Hondo Country Club, tenant)	443	354
Standard Oil Company of California	118	94
J. F. Standley and Myrtle M. Standley	1	1
Star Dust Lands, Inc.	85	68
State of California (included herein are water rights of Fred C. Nelles School for Boys of the State of California Department of the Youth Authority; Metropolitan State Hospital of the State of California Department of Mental Hygiene; and District VII, Division of Highways of the State of California Department of Public Works)	757	606
Stauffer Chemical Company	181	145
John Steele and Clara D. Steele	4	4
Steve Stefani, Jr.	0	0
Steve Stefani, Sr., and Dora Stefani (Henry Baar and Fred Fekkes, tenants)	38	30
Andrew Stellingwerf	0	0
Henry Stellingwerf and Jeanette Stellingwerf	14	11
Henry Sterk and Betty S. Sterk	114	91
V. C. Stiefel	3	3
Sophia J. Stockmal and John F. Stockmal	3	3
William Thomas Stover and Gertrude D. Stover	3	3
Louis Struikman and Alice Struikman (Louis Struikman and Pete Struikman dba Louis Struikman and Son, tenants as to 43 acre feet of water right and 34 acre feet of allowed pumping allocation; and Sidney		

Name	Total Water Right	Allowed Pumping Allocation
Van Dyke, tenant as to 10 acre feet of water right and 8 acre feet of allowed pumping allocation) (see also below)	53	42
Louis Struikman and Peter Struikman	3	3
Cornelius Struikmans and Ida Struikmans	9	7
Henry Struikmans and Nellie Struikmans	13	10
Henry Struikmans, Jr.	0	0
Suburban Mutual Water Co.	0	0
Suburban Water Systems	3,666	2,933
Kazuo Sumida	2	2
Sun Coast Development Company	0	0
Sun Holding Corporation (see listing under name of Mausoleum Park, Inc.)		
Sunnyside Mausoleum Company	60	48
Sunset Cemetery Association	26	21
E. A. Sutton and Ramona Sutton	39	31
Swift & Company	2,047	1,638
Roy Sybrandy and Anne Sybrandy	29	23
Sykes Realty Co., Floyd G. Marcusson and Albert C. Sykes	2	2
Andy Sytsma and Dorothy Sytsma (Albert Sytsma and Robert Sytsma, doing business as Sytsma Bros., tenants)	20	16
Tarr and McComb Oil Company, Ltd. (Pablo Oropeza, tenant)	86	69
Roy Tashima and Shigeo Tashima	1	1
Fay G. Tawzer and Lawrence R. Tawzer (see listing under name of Fern Ethyl Gordon)		
Dorothy Taylor	0	0
Quentin D. Taylor	0	0

Name	Total Water Right	Allowed Pumping Allocation
Carl Teixeira and Evelyn Teixeira	11	9
George S. Teixeira and Laura L. Teixeira	17	14
Harm Te Velde and Zwaantina Te Velde	253	202
Theo Hamm Brewing Co.	150	120
Thirty-Three Forty-Five East Forty-Fifth Street, Inc.	17	14
O. T. Thompson and Drusilla Thompson	20	16
Tract Number One Hundred and Eighty Water Company	1,526	1,221
Tract 349 Mutual Water Company	529	423
Fred Troost and Annie Troost	53	42
Frank W. Tybus and June E. Tybus (see listing under name of Lakewood Pipe Co.)		
Uehling Water Company, Inc.	846	677
Union Development Co., Inc.	12	10
Union Oil Company of California (see listing under name of Florence Hellman Ehrman)		
Union Pacific Railroad Company	656	525
Union Packing Company	100	80
United California Bank (see listing under name of Huntley L. Gordon)		
United Dairymen's Association	1	1
United States Gypsum Company	1,581	1,265
United States Rubber Company	820	656
United States Steel Corporation	176	141
Masaru Uyeda, Hajime Hirashima, and Tadashi Uyeda	12	10
G. A. Van Beek (see listing under name of Art Hop, Sr.)		

Name	Total Water Right	Allowed Pumping Allocation
Bas Van Dam (see listing under name of Gertrude Van Dam)		
Carrie Agnes Van Dam (see listing under name of Bernard William Bootsma)		
Cornelius A. Van Dam and Florence Van Dam	24	19
Dick Van Dam, Jr.	0	0
Gerrit Van Dam and Grace Van Dam (William De Kriek, tenant)	13	10
Gertrude Van Dam (Bas Van Dam, tenant as to 29 acre feet of water right and 23 acre feet of allowed pumping right; and Henry Van Dam, tenant as to 19 acre feet of water right and 15 acre feet of allowed pumping right)	48	38
Hank Van Dam and Jessie Van Dam (Viva Ormonde, tenant)	22	18
Henry Van Dam (see listing under name of Gertrude Van Dam)		
Jacob Vandenberg and Anna Vandenberg (Pete Nauta, tenant)	8	6
August Vandenburg, Ben W. Vandenburg, and Andrew W. Vandenburg (Jan Bokma, tenant)	6	5
John Van Den Raadt	4	4
M. Vander Dussen and Aletta C. Vander Dussen	12	10
Sybrand Vander Dussen and Johanna Vander Dussen	23	18
Helen Goedhart Van Eik (see listing under name of Harry N. Goedhart)		
Cornelius Vander Eyk, aka Case Vander Eyk, and Nelly Vander Eyk, aka Nellie Vander Eyk	7	6
George Van Der Ham and Alice Van Der Ham	10	8

Name	Total Water Right	Allowed Pumping Allocation
Huibert Vander Ham and Henrietta Vander Ham	33	26
Joe Vanderham and Cornelia Vanderham	13	10
John Vanderham and Nell M. Vanderham	20	16
Charlie Vander Kooi and Lena Mae Vander Kooi (see also listing under name of Michel Bordato)	13	10
Pete Vander Kooi (see listing under name of Ed Haakma)		
Bert Vander Laan and Stella Vander Laan	10	8
Matt Vander Sys and Johanna Vander Sys	13	10
Bill Vander Vegt and Henny Vander Vegt	18	14
George Vander Vegt and Houjke Vander Vegt	12	10
Harry J. Vander Wall and Marian E. Vander Wall	12	10
Bert Vande Vegte and Lillian Vande Vegte	1	1
Anthony Van Diest	0	0
Jennie Van Diest, as to undivided 1/3 interest; Ernest Van Diest and Rena Van Diest, as to undivided 1/3 interest; and Cornelius Van Diest and Anna Van Diest, as to undivided 1/3 interest. (Van Diest Dairy, tenant)	20	16
Katrena Van Diest and/or Margaret Van Diest	92	74
Henry W. Van Dyk (see listing under name of Henrietta Veenendaal)		
Wiechert Van Dyk and Jennie Van Dyk	13	10
Corty Van Dyke (see listing under name of Charles E. Adams)		
Sidney Van Dyke (see listing under name of Louis Struickman)		

Name	Total Water Right	Allowed Pumping Allocation
William Van Foeken	0	0
Jake Van Haaster and Gerarda Van Haaster	0	0
Arie C. Van Leeuwen (see listing under name of Sam Bouman)		
Gerrit Van Leeuwen of 15405 Shoemaker Road, Norwalk (see listing under name of Pacific Electric Railway Company)		
Henry Van Leeuwen and Caroline P. Van Leeuwen; Gerrit Van Leeuwen of 5948 Lorelei Street, Bellflower, and Ellen Van Leeuwen	1	1
Jake Van Leeuwen, Jr. and Cornelia J. Van Leeuwen (James C. Boogerd and Jake Van Leeuwen, Jr. dba Van Leeuwen & Boogerd, tenants)	9	7
Anthony R. Van Loon (see listing under name of Henry Van Ruiten)		
John Van Nierop and Lily E. Van Nierop	0	0
Henry Van Ruiten and Mary A. Van Ruiten, as to undivided 1/2 interest; and Jake Van Ruiten and Jacoba Van Ruiten, as to undivided 1/2 interest (W. P. Jordan, Anthony R. Van Loon, and Jules Wesselink, tenants)	88	70
Pete Van Ruiten and Mary Van Ruiten (for purposes of clarification, this Mary Van Ruiten is also known as Mrs. Pete Van Ruiten and is not the same individual as sued herein as Mary A. Van Ruiten, who is also known as Mrs. Henry G. Van Ruiten)	38	30
Z. Van Spanje (see listing under name of Fumiko Mitsuuchi)		
Evert Veenendaal and Gertrude Veenendaal (see listing under name of Earl Haringa)		
Henrietta Veenendaal (Henry W. Van Dyk, tenant)	10	8

Name	Total Water Right	Allowed Pumping Allocation
Henry Veenendaal and Henrietta Veenendaal	8	6
Joe H. Veenendaal and Margie Veenendaal	34	27
John Veenendaal	0	0
Vehicle Maintenance & Painting Corporation (see listing under name of Nicholas C. Conteas)		
Salvador Velasco	16	13
Mike Veldhuis	0	0
Albert Veldhuizen and Helen Veldhuizen	23	18
Jack Verbree	0	0
Mrs. Klaasje Verburg (Leon Verburg to extent of interest under contract to purchase)	12	10
John C. Verhoeven and Sadie Verhoeven	25	20
Joseph C. Vierra and Caroline Vierra (Joseph C. Vierra and William J. Vierra, doing business as Vierra & Vierra, tenants)	13	10
Sieger Vierstra and Nellie G. Vierstra (Jacob J. Bosma, tenant)	12	10
Virginia Country Club of Long Beach	340	272
Roy Visbeek	0	0
Louis Visser	9	7
Vista Hill Psychiatric Foundation	39	31
Louie Von Ah	0	0
Walnut Irrigation District	154	123
Walnut Park Mutual Water Co.	1,245	996
C. D. Webster (see also listing under name of Southern California Edison Company)	1	1

Name	Total Water Right	Allowed Pumping Allocation
Morris Weiss and Bessie Weiss (Wilbur Mellema, tenant) (also see listings under names of Elmo D. Murphy and Emma Engler)	20	16
Wells Fargo Bank as Executor of Estate of Edward H. Heller, Deceased, and as Executor of Estate of Lloyd W. Dinkelspiel, Deceased, and as Trustee under Trust created by the Will of Florence H. Dinkelspiel, Deceased (see listing under name of Florence Hellman Ehrman)		
Jules Wesselink (see listing under name of Henry Van Ruiten)		
West Gateway Mutual Water Co.	105	84
Henry Westra and Hilda Westra	40	32
John D. Westra (see listing under name of Orla Company)		
Francis O. Wharram (see listing under name of Shayman & Wharram)		
Whittier Union High School District	125	100
Arend Z. Wier	14	11
H. Wiersema, aka Harm Wiersema and Pearl Wiersema	16	13
William Wiersma and Elbra Wiersma	7	6
Richard Wigboly (see listing under name of Central Manufacturing District, Inc.)		
Mary Wilcox (see listing under name of Jenkins Realty Mutual Water Co.)		
Ralph P. Williams and Mary Williams	14	11
Wilshire Oil Company of California	1,795	1,436
Melvin L. Wilson and Marie Wilson	1	1
D. P. Winslow and Dorothy C. Winslow (Berton Elson, tenant)	15	12

Name	Total Water Right	Allowed Pumping Allocation
Helene K. Winters	1	1
Fred E. Wiseman and Grayce Anna Wiseman	2	2
Helen Wolfsberger and Christine Joseph	2	2
Volney Womack	0	0
Cho Shee Woo (Hong Woo and Ngorn Seung Woo, as agents of property for Cho Shee Woo)	20	16
Gerrit Wybenga and Rena Wybenga	10	8
George Yamamoto and Alice Yamamoto, also known as Fumi Yamamoto (Fumi Garden Farms, Inc., tenant) (see also listing under name of Southern California Edison Company)	17	14
Paul N. Yokota and Miyo Yokota	4	4
Minoru Yoshijima (see listing under name of Kazuo Hatanaka)		
Frank Yoshioka	0	0
Maxine Young	3	3
Mrs. A. Zandvliet also known as Anna A. Zandvliet	8	6
Arnold Zeilstra and Nellie Zeilstra	6	5
George Zivelonghi and Antonio Zivelonghi	121	97
Dick Zuidervaart and Janna Zuidervaart (Artesia Milling Company, tenant)	1	1
Andy Zylstra	0	0
Zylstra Bros. a partnership consisting of Lammert Zylstra and William Zylstra (see listing under name of John H. Coito)		
John Zylstra and Leonard J. Zylstra, doing business as The Zylstra Dairy	22	18
Leonard Zylstra (not the same person as Leonard J. Zylstra	0	0

4. Transition in Administrative Year - Application. "Year" and "Administrative Year" as used throughout this judgment shall mean the water year; provided that with the first fiscal year (July 1 - June 30) commencing at least four months after the "Amended Judgment" became final, and thereafter, said words shall mean the fiscal year. Since this will provide a transitional Administrative year of nine months, October 1 - June 30, ("short year" hereafter), notwithstanding the finding and determinations in the annual Watermaster report for the then last preceding water year, the Allowed Pumping Allocations of the parties and the quantity which Defendant City of Los Angeles is annually permitted to extract from Central Basin for said short year shall be based on three-quarters of the otherwise allowable quantity. During said short year, because of hardships that might otherwise result, any overextractions by a party shall be deemed pursuant to paragraph 2, Subpart B of Part III of this judgment (p. 61), and it shall be deemed that the Watermaster has made the determination of unreasonable hardship to which reference is therein made.

II. APPOINTMENT OF WATERMASTER; WATERMASTER ADMINISTRATION PROVISIONS. Department of Water Resources of the State of California is hereby appointed Watermaster, for an indefinite term, but subject to removal by the Court, to administer this judgment and shall have the following powers, duties and responsibilities:

1. Duties, Powers and Responsibilities of Watermaster. In order to assist the Court in the administration and enforcement of the provisions of this judgment and to keep the Court

fully advised in the premises, the Watermaster shall have the following duties, powers and responsibilities in addition to those before or hereafter provided in this judgment:

(a) Watermaster May Require Reports, Information and Records. To require of parties the furnishing of such reports, information and records as may be reasonably necessary to determine compliance or lack of compliance by any party with the provisions of this judgment.

(b) Requirement of Measuring Devices. To require all parties or any reasonable classification of parties owning or operating any facilities for the extraction of ground water from Central Basin to install and maintain at all times in good working order at such party's own expense, appropriate measuring devices at such times and as often as may be reasonable under the circumstances and to calibrate or test such devices.

(c) Inspections by Watermaster. To make inspections of ground water production facilities and measuring devices at such times and as often as may be reasonable under the circumstances and to calibrate or test such devices.

(d) Annual Report. The Watermaster shall prepare, file with the Court and mail to each of the parties on or before the 15th day of the fourth month following the end of the preceding Administrative year, an annual report for such year, the scope of which shall include but not be limited to the following:

1. Ground Water Extractions
2. Exchange Pool Operation
3. Use of Imported Water

4. Violations of Judgment and Corrective Action Taken

5. Change of Ownership of Total Water Rights

6. Watermaster Administration Costs

7. Recommendations, if any.

(e) Annual Budget and Appeal Procedure in Relation Thereto. The Watermaster shall annually prepare a tentative budget for each Administrative year stating the anticipated expense for administering the provisions of this judgment. The Watermaster shall mail a copy of said tentative budget to each of the parties hereto at least 60 days before the beginning of each Administrative year. For the first Administrative year of operation under this judgment, if the Watermaster is unable to meet the above time requirement, the Watermaster shall mail said copies as soon as possible. If any party hereto has any objection to said tentative budget, it shall present the same in writing to the Watermaster within 15 days after the date of mailing of said tentative budget by the Watermaster. If no objections are received within said period, the tentative budget shall become the final budget. If objections are received, the Watermaster shall, within 10 days thereafter, consider such objections, prepare a final budget and mail a copy thereof to each party hereto, together with a statement of the amount assessed to each party. Any party may apply to the Court within 15 days after the mailing of such final budget for a revision thereof based on specific objections thereto. The parties hereto shall make the payments otherwise required of them to the Watermaster even though such a request for revision has been filed with the Court. Upon any revision by the Court the

Watermaster shall either remit to the parties their prorata portions of any reduction in the budget, or credit their accounts with respect to their budget assessments for the next ensuing Administrative year, as the Court shall direct.

The amount to be assessed to each party shall be determined as follows: If that portion of the final budget to be assessed to the parties is equal to or less than $20.00 per party then the cost shall be equally apportioned among the parties. If that portion of the final budget to be assessed to parties is greater than $20.00 per party then each party shall be assessed a minimum of $20.00. The amount of revenue expected to be received through the foregoing minimum assessments shall be deducted from that portion of the final budget to be assessed to the parties and the balance shall be assessed to the parties having Allowed Pumping Allocations, such balance being divided among them proportionately in accordance with their respective Allowed Pumping Allocations.

Payment of the assessment provided for herein, subject to adjustment by the Court as provided, shall be made by each such party prior to beginning of the Administrative year to which the assessment relates, or within 40 days after the mailing of the tentative budget, whichever is later. If such payment by any party is not made on or before said date, the Watermaster shall add a penalty of 5% thereof to such party's statement. Payment required of any party hereunder may be enforced by execution issued out of the Court, or as may be provided by order hereinafter made by the Court, or by other proceedings by the Watermaster or by any party hereto on the Watermaster's behalf.

Any money unexpended at the end of any Administrative year shall be applied to the budget of the next succeeding Administrative year.

Notwithstanding the above, no part of the budget of the Watermaster shall be assessed to the Plaintiff District or to any party who has not extracted water from Central Basin for a period of two successive Administrative years prior to the Administrative year in which the tentative budget should be mailed by the Watermaster under the provisions of this subparagraph (e).

(f) Rules. The Watermaster may adopt and amend from time to time such rules as may be reasonably necessary to carry out its duties, powers and responsibilities under the provisions of this judgment. The rules shall be effective on such date after the mailing thereof to the parties as is specified by the Watermaster, but not sooner than 30 days after such mailing.

2. Use of Facilities and Data Collected by Other Governmental Agencies. The Watermaster is directed not to duplicate the collection of data relative to conditions of the Central Basin which is then being collected by one or more governmental agencies, but where necessary the Watermaster may collect supplemental data. Where it appears more economical to do so, the Watermaster is directed to use such facilities of other governmental agencies as are available to it under either no cost or cost agreements with respect to the receipt of reports, billings to parties, mailings to parties, and similar matters.

3. Appeal from Watermaster Decisions Other Than With Respect to Budget. Any party interested therein who has objection to any rule, determination, order or finding made by the Watermaster, may make objection thereto in writing delivered to the Watermaster within 30 days after the date the Watermaster mails written notice of the making of such rule, determination, order or finding, and within 30 days after such delivery the Watermaster shall consider said objection and shall amend or affirm his rule, determination, order or finding and shall give notice thereof to all parties. Any such party may file with the Court within 30 days from the date of said notice any objection to such rule, determination, order or finding of the Watermaster and bring the same on for hearing before the Court at such time as the Court may direct, after first having served said objection upon all other parties. The Court may affirm, modify, amend or overrule any such rule, determination, order or finding of the Watermaster. The provisions of this paragraph shall not apply to budgetary matters, as to which the appellate procedure has heretofore been set forth. Any objection under this paragraph shall not stay the rule, determination, order or finding of the Watermaster. However, the Court, by ex parte order, may provide for a stay thereof on application of any interested party on or after the date that any such party delivers to the Watermaster any written objection.

4. Effect of Non-Compliance by Watermaster With Time Provisions. Failure of the Watermaster to perform any duty, power or responsibility set forth in this judgment within the time limitation herein set forth shall not deprive the

Watermaster of authority to subsequently discharge such duty, power or responsibility, except to the extent that any such failure by the Watermaster may have rendered some otherwise required act by a party impossible.

III. PROVISIONS FOR PHYSICAL SOLUTION TO MEET THE WATER REQUIREMENTS IN CENTRAL BASIN. In order to provide flexibility to the injunction set forth in Part I of the judgment, and to assist in a physical solution to meet water requirements in Central Basin, the injunction so set forth is subject to the following provisions.

A. Carryover of Portion of Allowed Pumping Allocation.

(1) Each party adjudged to have a Total Water Right or water rights and who, during a particular Administrative year, does not extract from Central Basin a total quantity equal to such party's Allowed Pumping Allocation for the particular Administrative year, less any allocated subscriptions by such party to the Exchange Pool, or plus any allocated requests by such party for purchase of Exchange Pool water, is permitted to carry over (the "One Year Carryover") from such Administrative year the right to extract from Central Basin in the next succeeding Administrative year so much of said total quantity as it did not extract in the particular Administrative year, not to exceed 20% of such party's Allowed Pumping Allocation, or 20 acre feet, whichever of said 20% or 20 acre feet is the larger.

(2) Following the declaration of a Declared Water Emergency and until the Declared Water Emergency ends either

by expiration or by resolution of the Board of Directors of the Central and West Basin Water Replenishment District, each party adjudged to have a Total Water Right or water rights and who, during a particular Administrative year, does not extract from Central Basin a total quantity equal to such party's Allowed Pumping Allocation for the particular Administrative year, less any allocated subscriptions by such party to the Exchange Pool, or plus any allocated requests by such party for purchase of Exchange Pool water, is permitted to carry over (the "Drought Carryover") from such Administrative year the right to extract from Central Basin so much of said total quantity as it did not extract during the period of the Declared Water Emergency, to the extent such quantity exceeds the One Year Carryover, not to exceed an additional 35% of such party's Allowed Pumping Allocation, or additional 35 acre feet, whichever of said 35% or 35 acre feet is the larger. Carryover amounts shall first be allocated to the One Year Carryover and any remaining carryover amount for that year shall be allocated to the Drought Carryover.

(3) No further amounts shall be added to the Drought Carryover following the end of the Declared Water Emergency, provided however that in the event another Declared Water Emergency is declared, additional Drought Carryover may be added, to the extent such additional Drought Carryover would not cause the total Drought Carryover to exceed the limits set forth above.

(4) The Drought Carryover shall be supplemental to and shall not affect any previous drought carryover acquired by a party pursuant to previous order of the court.

B. When Over-extractions May be Permitted.

1. Underestimation of Requirements for Water. Any party hereto having an Allowed Pumping Allocation and not in violation of any provision of this judgment may extract in an Administrative year an additional quantity of water not to exceed: (a) 20% of such party's Allowed Pumping Allocation or 20 acre feet, whichever is greater, and (b) any amount in addition thereto which may be approved in advance by the Watermaster.

2. Reductions in Allowed Pumping Allocations in Succeeding Years to Compensate for Permissible Overextractions. Any such party's Allowed Pumping Allocation for the following Administrative year shall be reduced by the amount over-extracted pursuant to paragraph 1 above, provided that if the Watermaster determines that such reduction in the party's Allowed Pumping Allocation in one Administrative year will impose upon such a party an unreasonable hardship, the said reduction in said party's Allowed Pumping Allocation shall be prorated over a period of five (5) Administrative years succeeding that in which the excessive extractions by the party occurred. Application for such relief to the Watermaster must be made not later than the 40th day after the end of the Administrative year in which such excessive pumping occurred. Watermaster shall grant such relief if such over-extraction, or any portion thereof, occurred during a period of Declared Water Emergency.

3. Reductions in Allowed Pumping Allocations for the Next Succeeding Administrative Year to Compensate for Overpumping. Whenever a party over-extracts in excess of 20% of such party's Allowed Pumping Allocation, or 20 acre feet, whichever is greater, and such excess has not been approved in advance by the Watermaster, then such party's Allowed Pumping Allocation for the following Administrative year shall be reduced by an amount equivalent to its total over-extractions in the particular Administrative year in which it occurred.

4. Reports of Certain Over-extractions to the Court. Whenever a party over-extracts in excess of 20% of such party's Allowed Pumping Allocation, or 20 acre feet, whichever is greater, without having obtained prior approval of the Watermaster, such shall constitute a violation of the judgment and the Watermaster shall make a written report to the Court for such action as the Court may deem necessary. Such party shall be subject to such injunctive and other processes and action as the Court might otherwise take with regard to any other violation of such judgment.

5. Effect of Over-extractions on Rights. Any party who over-extracts from Central Basin in any Administrative year shall not acquire any additional rights by reason of such over-extractions; nor, shall any required reductions in extractions during any subsequent years reduce the Total Water Right or water rights of any party to the extent said over-extractions are in compliance with paragraph 1 above.

6. Pumping Under Agreement With Plaintiff During Periods of Emergency. Plaintiff overlies Central Basin and

engages in activities of replenishing the ground waters thereof. Plaintiff by resolution has appropriated for use during emergencies the quantity of 17,000 acre feet of imported and reclaimed water replenished by it into Central Basin, and pursuant to such resolution Plaintiff reserves the right to use or cause the use of such quantity during such emergency periods.

(a) Notwithstanding any other provision of this judgment, parties who are water purveyors (including successors in interest) are authorized to enter into agreements with Plaintiff under which such water purveyors may exceed their respective Allowed Pumping Allocations for the particular administrative year when the following conditions are met:

(1) Plaintiff is in receipt of a resolution of the Board of Directors of the Metropolitan Water District of Southern California ("MWD") that there is an actual or immediately threatened temporary shortage of MWD's imported water supply compared to MWD's needs, or a temporary inability to deliver MWD's imported water supply throughout its area, which will be alleviated by overpumping from Central Basin.

(2) The Board of Directors of both Plaintiff and Central Basin Municipal Water District by resolutions concur in the resolution of MWD's Board of Directors, and the Board of Directors of Plaintiff finds in its resolution that the average minimum elevation of water surface among those wells in the Montebello Forebay of the Central Basin designated as Los Angeles County Flood Control District Wells Nos. 1601T, 1564P, 1615P,

and 1626L, is at least 43.7 feet above sea level. This computation shall be based upon the most recent "static readings" taken, which shall have been taken not more than four weeks prior. Should any of the wells designated above become destroyed or otherwise be in a condition so that readings cannot be made, or the owner prevent their use for such readings the Board of Directors of the Plaintiff may, upon appropriate engineering recommendation substitute such other well or wells as it may deem appropriate.

(3) In said resolution, Plaintiff's Board of Directors sets a public hearing, and notice of the time, place and date thereof (which may be continued from time to time without further notice) is given by First Class Mail to the current designees of the parties, filed and served in accordance with Part V, paragraph 3 of this Judgment. Said notice shall be mailed at least five (5) days before the scheduled hearing date.

(4) At said public hearing, parties (including successors in interest) are given full opportunity to be heard, and at the conclusion thereof the Board of Directors of Plaintiff by resolution decides to proceed with agreements under this Part III-B.

(5) For purposes of this Part III-B, "water purveyors" mean those parties (and successors in interest) which sell water to the public whether regulated public utilities, mutual water companies or public entities, which have a connection or connections for the taking

of imported water of MWD, or access to imported water of MWD through a connection, and which normally supply part of their customer's needs with such imported water.

(b) All such agreements shall be subject to the following requirements, and such others as Plaintiff's Board of Directors shall require:

(1) They shall be of uniform content except as to quantity involved, and any special provisions considered necessary or desirable with respect to local hydrological conditions or good hydrologic practice.

(2) They shall be offered to all water purveyors, excepting those which Plaintiff's Board of Directors determine should not over pump because such over pumping would occur in undesirable proximity to a sea water barrier project designed to forestall sea water intrusion, or within or in undesirable proximity to an area within Central Basin wherein groundwater levels are at an elevation where over pumping is under all the circumstances then undesirable.

(3) The maximum terms for the agreements shall be four months, which agreements shall commence on the same date and end on the same date (and which may be executed at any time within the four month period), unless an extension thereof is authorized by the Court, under Part IV of this judgment.

(4) They shall contain provisions that the water purveyor executing the agreement pay to the Plaintiff a

price in addition to the applicable replenishment assessment determined on the following formula. The normal price per acre-foot of Central Basin Municipal Water District's (CBMWD) treated domestic and municipal water, as "normal" price of such category of water is defined in Part C, paragraph 10 (price to be paid for Exchange Pool Water) as of the beginning of the contract term less the deductions set forth in said paragraph 10 for the administrative year in which the contract term commences. The agreement shall provide for adjustments in the first of said components for any proportional period of the contract term during which the CBMWD said normal price is changed, and if the agreement straddles two administrative years, the said deductions shall be adjusted for any proportionate period of the contract term in which the amount thereof or of either subcomponent changes for purposes of said paragraph 10. Any price for a partial acre-foot shall be computed prorata. Payments shall be due and payable on the principle that over extractions under the agreement are of the last water pumped in the fiscal year, and shall be payable as the agreement shall provide.

(5) They shall contain provisions that:

(a) All of such agreements (but not less than all) shall be subject to termination by Plaintiff if, in the Judgment of Plaintiff's Board of Directors, the conditions or threatened conditions upon which they

were based have abated to the extent over extractions are no longer considered necessary; and (b) that any individual agreement or agreements may be terminated if the Plaintiff's Board of Directors finds that adverse hydrologic circumstances have developed as a result of over extractions by any water purveyor or purveyors which have executed said agreements, or for any other reason that Plaintiff's Board of Directors finds good and sufficient.

(c) Other matters applicable to such agreements and over pumping thereunder are as follows, without need for express provisions in the agreements;

(1) The quantity of over pumping permitted shall be additional to that which the water purveyor could otherwise over pump under this Judgment.

(2) The total quantity of permitted over pumping under all said agreements during said four months shall not exceed Seventeen thousand (17,000) acre feet, but the individual water purveyor shall not be responsible or affected by any violation of this requirement. That total is additional to over extractions otherwise permitted under this Judgment.

(3) Only one four month period may be utilized by Plaintiff in entering into such agreements, as to any one emergency or continuation thereof declared by MWD's Board of Directors under paragraph 6(a).

(4) Plaintiff may utilize the ex parte provisions of Part IV of this Judgment in lieu of the authority

contained herein (which ex parte provisions are not limited as to time, nature of relief, or terms of any agreements), but neither Plaintiff nor any other party shall utilize both as to any one such emergency or continuation thereof.

(5) If any party claims it is being damaged or threatened with damage by the over extractions by any party to such an agreement, the first party or the Watermaster may seek appropriate action of the Court for termination of any such agreement upon notice of hearing to the party complaining, to the party to said agreement, to the plaintiff, and to any parties who have filed a request for special notice. Any termination shall not affect the obligation of the party to make payments under the agreement for over extractions which did occur thereunder.

(6) Plaintiff shall maintain separate accounting of the proceeds from payments made pursuant to agreements entered into under this part. Said fund shall be utilized solely for purposes of replenishment in replacement of waters in Central Basin and West Basin. Plaintiff shall as soon as practicable cause replenishment in Central Basin by the amounts to be overproduced pursuant to this Paragraph 6 commencing at Page 63, whether through spreading, injection, or in lieu agreements.

(7) Over extractions pursuant to the agreements shall not be subject to the "make up" provisions of the

Judgment as amended, provided that if any party fails to make payments as required by the agreement, Plaintiff may require such "make up" under Paragraph 3, Subpart B, Part III of the Judgment (Page 62).

(8) Water Purveyor under any such agreement may, and is encouraged to enter into appropriate arrangements with customers who have water rights in Central Basin under or pursuant to this Judgment whereby the Water Purveyor will be assisted in meeting the objectives of the agreement.

(9) Nothing in this Paragraph 6 limits the exercise of the reserved jurisdiction of the court except as provided in subparagraph (c) (4) above.

7. Exemption for Extractors of Contaminated Groundwater. Any party herein may petition the Replenishment District for a Non-consumptive Water Use Permit as part of a project to remedy or ameliorate groundwater contamination. If the petition is granted as set forth in this part, the petitioner may extract the groundwater as permitted hereinafter, without the production counting against the petitioner's production rights.

(a) If the Board of the Replenishment District determines by Resolution that there is a problem of groundwater contamination that a proposed program will remedy or ameliorate, an operator may make extractions of groundwater to remedy or ameliorate that problem without the production counting against the petitioner's production rights if the water is not applied to beneficial surface use, its extractions are made in compliance with all the terms and conditions of the Board Resolution, and

the Board has determined in the Resolution either of the following:

(1) The groundwater to be extracted is unusable and cannot be economically treated or blended for use with other water.

(2) The proposed program involves extraction of usable water in the same quantity as will be returned to the underground without degradation of quality.

(b) The Resolution may provide those terms and conditions the Board deems appropriate, including, but not limited to, restrictions on the quantity of the extractions to be so exempted, limitations on time, periodic reviews, requirement of submission of test results from a Board-approved laboratory, and any other relevant terms or conditions.

(c) Upon written notice to the operator involved, the Board may rescind or modify its Resolution. The rescission or modification of the Resolution shall apply to groundwater extractions occurring more than ten days after the rescission or modification. Notice of rescission or modification shall be either mailed first class mail, postage prepaid, at least two weeks prior to the meeting of the Board at which the rescission or modification will be made to the address of record of the operator or personally delivered two weeks prior to the meeting.

(d) The Board's decision to grant, deny, modify or revoke a permit or to interrupt or stop a permitted project may be appealed to this court within thirty days of the notice thereof to the applicant and upon thirty days notice to the designees of all parties herein.

(e) The Replenishment District shall monitor and periodically inspect the project for compliance with the terms and conditions for any permit issued pursuant to these provisions.

(f) No party shall recover costs from any other party herein ~~on~~ in connection with ~~determinators~~ determinations made with respect to this part.

C. Exchange Pool Provisions.

(1) Definitions.

For purposes of these Exchange Pool provisions, the following words and terms have the following meanings:

(a) "Exchange Pool" is the arrangement hereinafter set forth whereby certain of the parties, ("Exchangees") may, notwithstanding the other provisions of the judgment, extract additional water from Central Basin to meet their needs, and certain other of the parties ("Exchangors"), reduce their extractions below their Allowed Pumping Allocations in order to permit such additional extractions by others.

(b) "Exchangor" is one who offers, voluntarily or otherwise, pursuant to subsequent provisions, to reduce its extractions below its Allowed Pumping Allocation in order to permit such additional extractions by others.

(c) "Exchangee" is one who requests permission to extract additional water from Central Basin.

(d) "Undue hardship" means unusual and severe economic or operational hardship, other than that arising (i) by reason of any differential in quality that might exist between water extracted from Central Basin and water available for importation

or (ii) by reason of any difference in cost to a party in subscribing to the Exchange Pool and reducing its extractions of water from Central Basin in an equivalent amount as opposed to extracting any such quantity itself.

2. Parties Who May Purchase Water Through the Exchange Pool. Any party not having existing facilities for the taking of imported water as of the beginning of any Administrative year, and any party having such facilities as of the beginning of any Administrative year who is unable, without undue hardship, to obtain, take, and put to beneficial use, through its distribution system or systems existing as of the beginning of the particular Administrative year, imported water in a quantity which, when added to its Allowed Pumping Allocation for that particular Administrative year, will meet its estimated needs for that particular Administrative year, may purchase water from the Exchange Pool, subject to the limitations contained in this Subpart C of this Part III (Subpart "C" hereinafter).

3. Procedure for Purchasing Exchange Pool Water. Not later than the 40th day following the commencement of each Administrative year, each such party desiring to purchase water from the Exchange Pool shall file with the Watermaster a request to so purchase, setting forth the amount of water in acre feet that such party estimates that it will require during the then current Administrative year in excess of the total of:

(a) Its Allowed Pumping Allocation for that particular Administrative year; and

(b) The imported water, if any, which it estimates it will be able, without undue hardship, to obtain, take and put to

beneficial use, through its distribution system or systems existing as of the beginning of that particular Administrative year.

Any party who as of the beginning of any Administrative year has existing facilities for the taking of imported water and who makes a request to purchase from the Exchange Pool must provide with such request substantiating data and other proof which, together with any further data and other proof requested by the Watermaster, establishes that such party is unable without undue hardship, to obtain, take and put to beneficial use through its said distribution system or systems a sufficient quantity of imported water which, when added to its said Allowed Pumping Allocation for the particular Administrative year, will meet its estimated needs. As to any such party, the Watermaster shall make a determination whether the party has so established such inability, which determination shall be subject to review by the court under the procedure set forth in Part II of this judgment. Any party making a request to purchase from the Exchange Pool shall either furnish such substantiating data and other proof, or a statement that such party had no existing facilities for the taking of imported water as of the beginning of that Administrative year, and in either event a statement of the basis for the quantity requested to be purchased.

4. Subscriptions to Exchange Pool.

(a) Required Subscription. Each party having existing facilities for the taking of imported water as of the beginning of any Administrative year hereby subscribed to the Exchange Pool for purposes of meeting Category (a) requests thereon, as more

particularly defined in paragraph 5 of this Subpart C, twenty percent (20%) of its Allowed Pumping Allocation, or the quantity of imported water which it is able, without undue hardship, to obtain, take and put to beneficial use through its distribution system or systems existing as of the beginning of the particular Administrative year in addition to such party's own estimated needs for imported water during that water year, whichever is the lesser. A party's subscription under this subparagraph (a) and subparagraph (b) of this paragraph 4 is sometimes hereinafter referred to as a 'required subscription'.

(b) Report to Watermaster by Parties with Connections and Unable to Subscribe 20%. Any party having existing facilities for the taking of imported water and estimating that it will be unable, without undue hardship, in that Administrative year to obtain, take and put to beneficial use through its distribution system or systems existing as of the beginning of that Administrative year, sufficient imported water to further reduce its extractions from the Central Basin by twenty percent (20%) of its Allowed Pumping Allocation for purposes of providing water to the Exchange Pool must furnish not later than the 40th day following the commencement of such Administrative year substantiating data and other proof which, together with any further data and other proof requested by the Watermaster, establishes said inability or such party shall be deemed to have subscribed twenty percent (20%) of its Allowed Pumping Allocation for the purpose of providing water to the Exchange Pool. As to any such party so contending such inability, the Watermaster shall make a determination whether the party has so established such

inability, which determination shall be subject to review by the Court under the procedure set forth in Part II of this judgment.

(c) Voluntary Subscriptions. Any party, whether or not having facilities for the taking of imported water, who desires to subscribe to the Exchange Pool a quantity or further quantity of its Allowed Pumping Allocation, may so notify the Watermaster in writing of the quantity of such offer on or prior to the 40th day following the commencement of the particular Administrative year. Such subscriptions are referred to hereinafter as "voluntary subscriptions." Any Exchangor who desires that any part of its otherwise required subscription not needed to fill Category (a) requests shall be available for Category (b) requests may so notify the Watermaster in writing on or prior to said 40th day. If all of that Exchangor's otherwise required subscription is not needed in order to fill Category (a) requests, the remainder of such required subscription not so used, or such part thereof as such Exchangor may designate, shall be deemed to be a voluntary subscription.

5. Limitations on Purchases of Exchange Pool Water and Allocation of Requests to Purchase Exchange Pool Water Among Exchangors.

(a) Categories of Requests. Two categories of Exchange Pool requests are established as follows:

(1) Category (a) requests. The quantity requested by each Exchangee, whether or not that Exchangee has an Allowed Pumping Allocation, which quantity is not in excess of 150% of its Allowed Pumping Allocation, if any, or 100 acre feet, whichever is greater. Requests or portions thereof within the

above criteria are sometimes hereinafter referred to as "Category (a) requests."

(2) Category (b) requests. The quantity requested by each Exchangee having an Allowed Pumping Allocation to the extent the request is in excess of 150% of that Allowed Pumping Allocation or 100 acre feet, whichever is greater, and the quantity requested by each Exchangee having no Allowed Pumping Allocation to the extent the request is in excess of 100 acre feet. Portions of requests within the above criteria are sometimes hereinafter referred to as "Category (b) requests."

(b) Filling of Category (a) Requests. All Exchange Pool subscriptions, required and voluntary, shall be available to fill Category (a) requests. Category (a) requests shall be filled first from voluntary subscriptions, and if voluntary subscriptions should be insufficient to fill all Category (a) requests required subscriptions shall be then utilized to fill Category (a) requests. All Category (a) requests shall be first filled before any Category (b) requests are filled.

(c) Filling of Category (b) Requests. To the extent that voluntary subscriptions have not been utilized in filling Category (a) requests, Category (b) requests shall be filled only out of any remaining voluntary subscriptions. Required subscriptions will then be utilized for the filling of any remaining Category (b) requests.

(d) Allocation of Requests to Subscriptions When Available Subscriptions Exceed Requests. In the event the quantity of subscriptions available for any category of requests exceeds those requests in that category, or exceeds the remainder

of those requests in that category, such requests shall be filled out of such subscriptions proportionately in relation to the quantity of each subscription.

(e) Allocation of Subscriptions to Category (b) Requests in the Event of Shortage of Subscriptions. In the event available subscriptions are insufficient to meet Category (b) requests, available subscriptions shall be allocated to each request in the proportion that the particular request bears to the total requests of the particular category.

6. Additional Voluntary Subscriptions. If subscriptions available to meet the requests of Exchangees are insufficient to meet all requests, additional voluntary subscriptions may be solicited and received from parties by the Watermaster. Such additional subscriptions shall be allocated first to Category (a) requests to the extent unfilled, and next to Category (b) requests to the extent unfilled. All allocations are to be otherwise in the same manner as earlier provided in paragraph 5 (a) through 5 (e) inclusive.

7. Effect if Category (a) Requests Exceed Available Subscriptions, Both Required and Voluntary. In the event that the quantity of subscriptions available to fill Category (a) requests is less than the total quantity of such requests, the Exchangees may, nonetheless, extract the full amount of their Category (a) requests otherwise approved by the Watermaster as if sufficient subscriptions were available. The amounts received by the Watermaster on account of that portion of the approved requests in excess of the total quantities available from Exchangors shall either be paid by the Watermaster to Central &

West Basin Water Replenishment District in trust for the purpose of purchasing imported water and spreading the same in Central Basin for replenishment thereof, or credited to an account of said Plaintiff District on the books of the Watermaster, at the option of said Plaintiff District. Thereafter said Plaintiff District may, at any time, withdraw said funds or any part thereof so credited in trust for the aforesaid purpose, or may by the 40th day of any Administrative year notify the Watermaster that it desires all or any portion of said funds to be expended by the Watermaster for the purchase of water available from subscriptions by Exchangors in the event the total quantity of such subscriptions exceeds the total quantity of approved requests by parties to purchase Exchange Pool water. To the extent that there is such an excess of available subscriptions over requests and to the extent that the existing credit in favor of Plaintiff District is sufficient to purchase such excess quantity at the price established for Exchange Pool purchases during that Administrative year, the account of the Plaintiff District shall be debited and the money shall be paid to the Exchangors in the same manner as if another party had made such purchase as an Exchangee. The Plaintiff District shall not extract any such Exchange Pool water so purchased.

8. Additional Pumping by Exchangees Pursuant to Exchange Pool Provisions. An Exchangee may extract from Central Basin in addition to its Allowed Pumping Allocation for a particular Administrative year that quantity of water which it has requested to purchase from the Exchange Pool during that Administrative year and which has been allocated to it pursuant

to the provisions of paragraphs 5, 6 and 7. The first pumping by an Exchangee in any Administrative year shall be deemed to be pumping of the party's allocation of Exchange Pool water.

9. Reduction in Pumping by Exchangors. Each Exchangor shall in each Administrative year reduce its extractions of water from Central Basin below its Allowed Pumping Allocation for the particular year in a quantity equal to the quantity of Exchange Pool requests allocated to it pursuant to the provisions of paragraphs 4, 5, 6 and 7 of this Subpart C.

10. Price to be Paid for Exchange Pool Water. The price to be paid by Exchangees and to be paid to Exchangors per acre foot for required and voluntary subscriptions of Exchangors utilized to fill requests on the Exchange Pool by Exchangees shall be the dollar amount computed as follows by the Watermaster for each Administrative year. The "normal" price as of the beginning of the Administrative year charged by Central Basin Municipal Water District (CBMWD) for treated MWD (Metropolitan Water District of Southern California) water used for domestic and municipal purposes shall be determined, and if on that date there are any changes scheduled during that Administrative year in CBMWD's "normal" price for such category of water, the weighted daily "normal" CBMWD price shall be determined and used in lieu of the beginning such price; and there shall be deducted from such beginning or weighted price, as the case may be, the "incremental cost of pumping water in Central Basin" at the beginning of the Administrative year and any then current rate or rates, of assessments levied on the pumping of ground water in Central Basin by Plaintiff District and any other governmental

agency. The "normal" price charged by CBMWD shall be the highest price of CBMWD for normal service excluding any surcharge or higher rate for emergency deliveries or otherwise failing to comply with CBMWD rates and regulations relating to earlier deliveries. The "incremental cost of pumping water in Central Basin" as of the beginning of the Administrative year shall be deemed to be the Southern California Edison Company Schedule No. PA-1 rate per kilowatt-hour, including all adjustments and all uniform authorized additions to the basic rate, multiplied by 560 kilowatt-hours per acre-foot, rounded to the nearest dollar (which number of kilowatt-hours has been determined to represent the average energy consumption to pump an acre-foot of water in Central Basin). In applying said PA-1 rate the charge per kilowatt-hour under the schedule shall be employed and if there are any rate blocks then the last rate block shall be employed. Should a change occur in Edison schedule designations, the Watermaster shall employ that applicable to motors used for pumping water by municipal utilities.

11. Carry-over of Exchange Pool Purchases by Exchangees. An Exchangee who does not extract from Central Basin in a particular Administrative year a quantity of water equal to the total of (a) its Allowed Pumping Allocation for that particular Administrative year, reduced by any authorized amount of carry-over into the next succeeding Administrative year pursuant to the provisions of Subpart A of Part III of this judgment, and (b) the quantity that it purchased from the Exchange Pool for that particular Administrative year, may carry over into the next succeeding Administrative year the right to

extract from Central Basin a quantity equal to the difference between said total and the quantity actually extracted in that Administrative year, but not exceeding the quantity purchased from the Exchange Pool for that Administrative year. Any such carry-over shall be in addition to that provided in said Subpart A of Part III.

If the 'Basinwide Average Exchange Pool Price' in the next succeeding Administrative year exceeds the 'Exchange Pool Price' in the previous Administrative year any such Exchangee exercising such carry-over rights hereinabove provided shall pay to the Watermaster, forthwith upon the determination of the 'Exchange Pool Price' in said succeeding Administrative year, and as a condition to such carry-over rights, an additional amount determined by multiplying the number of acre feet of carry-over by the difference in 'Exchange Pool Price' as between the two Administrative years. Such additional payment shall be miscellaneous income to the Watermaster which shall be applied by him against that share of the Watermaster's budget to be paid by the parties to this Agreement for the second Administrative year succeeding that in which the Exchange Pool water was so purchased.

12. Notification by Watermaster to Exchangors and Exchangees of Exchange Pool Requests and Allocations Thereof and Price of Exchange Pool Water. Not later than the 65th day after the commencement of each Administrative year, the Watermaster shall determine and notify all Exchangors and Exchangees of the total of the allocated requests for Exchange Pool water and shall provide a schedule divided into categories of requests showing

the quantity allocated to each Exchangee and a schedule of the allocation of the total Exchange Pool requirements among the Exchangors. Such notification shall also advise Exchangors and Exchangees of the prices to be paid to Exchangors for subscriptions utilized and the Exchange Pool Price for that Administrative year as determined by the Watermaster. The determinations of the Watermaster in this regard shall be subject to review by the Court in accordance with the procedure set forth in Part II of this judgment.

13. Payment by Exchangees. Each Exchangee shall, on or prior to last day of the third month of each Administrative year, pay to the Watermaster one-quarter of said price per acre-foot multiplied by the number of acre feet of such party's approved request and shall, on or before the last day of each of the next succeeding three months, pay a like sum to the Watermaster. Such amounts must be paid by each Exchangee regardless of whether or not it in fact extracts or uses any of the water it has requested to purchase from the Exchange Pool.

14. Payments to Exchangors. As soon as possible after receipt of moneys from Exchangees, the Watermaster shall remit to the Exchangors their prorata portions of the amount so received in accordance with the provisions of paragraph 10 above.

15. Delinquent Payments. Any amounts not paid on or prior to any due date above shall carry interest at the rate of 1% per month or any part of a month. Any amounts required to be so paid may be enforced by the equitable powers of the Court, including, but not limited to, the injunctive process of the Court. In addition thereto, the Watermaster, as Trustee for the

Exchangors, may enforce such payment by any appropriate legal action, and shall be entitled to recover as additional damages reasonable attorneys' fees incurred in connection therewith. If any Exchangee shall fail to make any payments required of it on or before 30 days after the last payment is due, including any accrued interest, said party shall thenceforward not be entitled to purchase water from the Exchange Pool in any succeeding Administrative year except upon order of the Court, upon such conditions as the Court may impose.

IV. CONTINUING JURISDICTION OF THE COURT.

The Court hereby reserves continuing jurisdiction and upon application of any interested party, or upon its own motion, may review and redetermine the following matters and any matters incident thereto:

(a) Its determination of the permissible level of extractions from Central Basin in relation to achieving a balanced basin and an economic utilization of Central Basin for ground water storage, taking into account any then anticipated artificial replenishment of Central Basin by governmental agencies for the purpose of alleviating what would otherwise be annual overdrafts upon Central Basin and all other relevant factors.

(b) Whether in accordance with applicable law any party has lost all or any portion of his rights to extract ground water from Central Basin and, if so, to ratably adjust the Allowed Pumping Allocations of the other parties and ratably thereto any remaining Allowed Pumping Allocation of such party.

(c) To remove any Watermaster appointed from time to time and appoint a new Watermaster; and to review and revise the duties, powers and responsibilities of the Watermaster and to make such other and further provisions and orders of the Court that may be necessary or desirable for the adequate administration and enforcement of the judgment.

(d) To revise the price to be paid by Exchangees and to Exchangors for Exchange Pool purchases and subscriptions.

(e) In case of emergency or necessity, to permit extractions from Central Basin for such periods as the Court may determine: (i) ratably in excess of the Allowed Pumping Allocations of the parties; or (ii) on a non-ratable basis by certain parties if either compensation or other equitable adjustment for the benefit of the other parties is provided. Such overextractions may be permitted not only for emergency and necessity arising within Central Basin area, but to assist the remainder of the areas within The Metropolitan Water District of Southern California in the event of temporary shortage or threatened temporary shortage of its imported water supply, or temporary inability to deliver the same throughout its area, but only if the court is reasonably satisfied that no party will be irreparably damaged thereby. Increased energy cost for pumping shall not be deemed irreparable damage. Provided, however, that the provisions of this subparagraph will apply only if the temporary shortage, threatened temporary shortage, or temporary inability to deliver was either not reasonably avoidable by the Metropolitan Water District, or if reasonably avoidable, good reason existed for not taking the steps necessary to avoid it.

(f) To review actions of the Watermaster.

(g) To assist the remainder of the areas within The Metropolitan Water District of Southern California within the parameter set forth in subparagraph (e) above.

(h) To provide for such other matters as are not contemplated by the judgment and which might occur in the future, and which if not provided for would defeat any or all of the purposes of this judgment to assure a balanced Central Basin subject to the requirements of Central Basin Area for water required for its needs, growth and development.

The exercise of such continuing jurisdiction shall be after 30 days notice to the parties, with the exception of the exercise of such continuing jurisdiction in relation to subparagraphs (e) and (g) above, which may be ex parte, in which event the matter shall be forthwith reviewed either upon the Court's own motion or the motion of any party upon which 30 days notice shall be so given. Within ten (10) days of obtaining any ex parte order, the party so obtaining the same shall mail notice thereof to the other parties. If any other party desires Court review thereof, the party obtaining the ex parte order shall bear the reasonable expenses of mailing notice of the proceedings, or may in lieu thereof undertake the mailing. Any contrary or modified decision upon such review shall not prejudice any party who relied on said ex parte order.

V. GENERAL PROVISIONS.

1. Judgment Constitutes Inter Se Adjudication. This judgment constitutes an inter se adjudication of the respective rights of all parties, except as may be otherwise specifically

indicated in the listing of the rights of the parties at pages 12 through 52 of this judgment, or in Appendix "2" hereof.

2. Assignment, Transfer, Etc., of Rights. Subject to the other provision of this judgment, and any rules and regulations of the Watermaster requiring reports relative thereto, nothing herein contained shall be deemed to prevent any party hereto from assigning, transferring, licensing or leasing all or any portion of such water rights as it may have with the same force and effect as would otherwise be permissible under applicable rules of law as exist from time to time.

3. Service Upon and Delivery to Parties of Various Papers. Service of the judgment on those parties who have executed that certain Stipulation and Agreement for Judgment or who have filed a notice of election to be bound by the Exchange Pool provisions shall be made by first class mail, postage prepaid, addressed to the designee and at the address designated for that purpose in the executed and filed Counterpart of the Stipulation and Agreement for Judgment or in the executed and filed "Notice of Election to be Bound by Exchange Pool Provisions", as the case may be, or in any substitute designation filed with the Court.

Each party who has not heretofore made such a designation shall, within 30 days after the judgment shall have been served upon that party, file with the Court, with proof of service of a copy upon the Watermaster, a written designation of the person to whom and the address at which all future notices, determinations, requests, demands, objections, reports and other

papers and processes to be served upon that party or delivered to that party are to be so served or delivered.

A later substitute designation filed and served in the same manner by any party shall be effective from the date of filing as to the then future notices, determinations, requests, demands, objections, reports and other papers and processes to be served upon or delivered to that party.

Delivery to or service upon any party by the Watermaster, by any other party, or by the Court, or any item required to be served upon or delivered to a party under or pursuant to the judgment may be by deposit in the mail, first class, postage prepaid, addressed to the designee and at the address in the latest designation filed by that party.

4. Judgment Does Not Affect Rights, Powers, Etc., of Plaintiff District. Nothing herein constitutes a determination or adjudication which shall foreclose Plaintiff District from exercising such rights, powers, privileges and prerogatives as it may now have or may hereafter have by reason of provisions of law.

5. Continuation of Order Under Interim Agreement. The order of Court made pursuant to the "Stipulation and Interim Agreement and Petition for Order" shall remain in effect through the water year in which this judgment shall become final (subject to the reserved jurisdiction of the Court).

6. Effect of: Extractions by Exchangees; Reductions in Extractions. With regard to Exchange Pool purchases, the first extractions by each Exchangee shall be deemed the extractions of the quantities of water which that party is

entitled to extract pursuant to his allocation from the Exchange Pool for that Administrative year. Each Exchangee shall be deemed to have pumped his Exchange Pool request so allocated for and on behalf of each Exchangor in proportion to each Exchangor's subscription to the Exchange Pool which is utilized to meet Exchange Pool requests. No Exchangor shall ever be deemed to have relinquished or lost any of its rights determined in this judgment by reason of allocated subscriptions to the Exchange Pool. Each Exchangee shall be responsible as between Exchangors and that Exchangee, for any tax or assessment upon the production of ground water levied for replenishment purposes by the Central and West Basin Water Replenishment District or by any other governmental agency with respect to water extracted by such Exchangee by reason of Exchange Pool allocations and purchases. No Exchangor or Exchangee shall acquire any additional rights, with respect to any party to this action, to extract waters from Central Basin pursuant to Water Code Section 1005.1 by reason of the obligations pursuant to and the operation of the Exchange Pool.

7. Judgment Binding on Successors, Etc. This judgment and all provisions thereof are applicable to and binding upon not only the parties to this action, but as well to their respective heirs, executors, administrators, successors, assigns, lessees, licensees and to the agents, employees and attorneys in fact of any such persons.

8. Costs. No party shall recover its costs herein as against any other party.

9. Intervention of Successors in Interest and New Parties. Any person who is not a party (including but not limited to successors or parties who are bound by this judgment) and who proposes to produce water from the basin or exercise water rights of a predecessor may seek to become a party to this Judgment through a Stipulation in Intervention entered into with the Plaintiff. Plaintiff may execute said Stipulation on behalf of the other parties herein, but such Stipulation shall not preclude a party from opposing such intervention at the time of the court hearing thereon. Said Stipulation for Intervention must thereupon be filed with the Court, which will consider an order confirming said intervention following thirty (30) days notice to the parties. Thereafter, if approved by the Court, such intervenor shall be a party bound by this Judgment and entitled to the rights and privileges accorded under the physical solution herein.

10. Effect of this Amended Judgment on Orders Filed Herein. This Second Amended Judgment shall not abrogate such rights of additional carry-over of unused water rights as may otherwise exist pursuant to orders herein filed June 2, 1977 and September 29, 1977.

THE CLERK WILL ENTER THIS SECOND AMENDED JUDGMENT FORTHWITH.

DATED: May 6, 1991

/s/ Florence T. Pickard
Judge of the Superior Court

ATTACHMENT 4

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CITY OF LONG BEACH

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

CENTRAL AND WEST BASIN WATER REPLENISHMENT DISTRICT, etc.,

Plaintiff,

vs.

CHARLES E. ADAMS, et al.,

Defendant

CITY OF LAKEWOOD, a municipal corporation,

Cross-Complainant

vs.

CHARLES E. ADAMS, et al.,

Cross-Defendants.

Case No.: 786,656

THIRD AMENDED JUDGMENT

(Declaring and establishing water rights in Central Basin, enjoining extractions therefrom in excess of specified quantities and providing for the storage and extraction of stored water.)

Assigned for all purposes to
Hon. Abraham Khan
Dept. 51

TABLE OF CONTENTS

The original judgment in this action was entered on or about August 27, 1965. Pursuant to the reserved and continuing jurisdiction of the court under the Judgment herein, certain amendments to said Judgment and temporary orders have heretofore been made and entered. Continuing jurisdiction of the court for this action is currently assigned to Hon. Abraham Khan.

The Motion of Plaintiff WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA (which originally brought this action under its former name "Central and West Basin Water Replenishment District"), and of defendants, City of Lakewood, City of Long Beach, Golden State Water Company, California Water Service Company, City of Los Angeles, City of Cerritos, City of Downey, City of Signal Hill, Pico Water District, Bellflower-Somerset Mutual Water Company, LaHabra Heights County Water District, City of Norwalk, Orchard Dale Water District, Montebello Land & Water Company, South Montebello Irrigation District, Sativa Los Angeles County Water District, City of Vernon and Central Basin Municipal Water District ("Moving Parties") herein for further amendments to the Judgment, notice thereof and of the hearing thereon having been duly and regularly given to all parties, came on for hearing in Department 51 of the above-entitled court on December 18, 2013 at 9:00 a.m. before said Hon. Abraham Khan. This "Third Amended Judgment" incorporates amendments and orders heretofore made to the extent presently operable and amendments pursuant to said last mentioned motion. To the extent this Amended Judgment is a restatement of the Judgment as heretofore amended, it is for convenience in incorporating all matters in one document, is not a readjudication of such matters and is not intended to reopen any such matters. As used hereinafter the word "Judgment" shall include the original Judgment entered in this action as amended to date, including this Third Amended Judgment.

There exists in the County of Los Angeles, State of California, an underground water basin or reservoir known and hereinafter referred to as the "Central Basin" or "Basin" described in Appendix "1" to this Judgment.

Within this Judgment, the following terms, words, phrases and clauses are used by the Court with the following meanings:

"Adjudicated Storage Capacity" means 220,000 acre-feet of the Available Dewatered

Space which has been apportioned herein for Individual Storage Accounts and Community Storage.

"Administrative Body" is defined in Section II(A).

"Administrative Year" means the twelve (12) month period beginning July 1 and ending June 30.

"Allowed Pumping Allocation" is that quantity in acre feet which the Court adjudges to be the maximum quantity which a party should be allowed to extract annually from Central Basin as set forth in Part I hereof, which constitutes 80% of such party's Total Water Right.

"Allowed Pumping Allocation for a particular Administrative Year" and "Allowed Pumping Allocation in the following Administrative Year" and similar clauses, mean the Allowed Pumping Allocation as increased in a particular Administrative Year by any authorized carryovers pursuant to Section III(A) of this Judgment and as reduced by reason of any over-extractions in a previous Administrative Year.

"Artificial Replenishment" is the replenishment of Central Basin achieved through the spreading or injection of imported or recycled water for percolation thereof into Central Basin by a governmental agency, including WRD.

"Artificial Replenishment Water" means water captured or procured by WRD to replenish the Basin, either directly by percolating or injecting the water into the Basin, or through in lieu replenishment by substituting surface water (or payment therefor) in lieu of production and use of groundwater.

"Available Dewatered Space" means the total amount of space available to hold groundwater within the Central Basin without causing Material Physical Harm, which space is allocated between Adjudicated Storage Capacity and Basin Operating Reserve.

"Base Water Right" is the highest continuous extractions of water by a party from Central Basin for a beneficial use in any period of five consecutive years after the commencement of overdraft in Central Basin and prior to the commencement of this action, as to which there has been no cessation of use by that party during any subsequent period of five consecutive years. As employed in the above definition, the words "extractions of water by a party" and "cessation

of use by that party" include such extractions and cessations by any predecessor or predecessors in interest.

"Basin Operating Reserve" means a total of 110,000 acre feet of Available Dewatered Space available for Basin operations as provided in Section IV(L). The Basin Operating Reserve added to the Adjudicated Storage Capacity equals the amount of Available Dewatered Space.

"Calendar Year" is the twelve month period commencing January 1 of each year and ending December 31 of each year.

"Carryover" is defined in Section III(A).

"Carryover Conversion" means the process of transferring water properly held as Carryover into Stored Water, or the water so converted to Stored Water.

"Central Basin" is the underground basin or reservoir underlying the Central Basin Area, the exterior boundaries of which Central Basin are the same as the exterior boundaries of Central Basin Area.

"Central Basin Area" is the territory described in Appendix "1" to this Judgment and is a segment of the territory comprising Plaintiff District.

"Central Basin Water Rights Panel" means the constituent body of Watermaster consisting of seven (7) Parties elected from among parties holding Allowed Pumping Allocations as provided in Section II(B).

"CEQA" refers to the California Environmental Quality Act, Public Resources Code §§ 21000 *et seq.*

"Community Storage Pool" is defined in Section IV(E).

"Declared Water Emergency" means a period commencing with the adoption of a resolution of the Board of Directors of WRD declaring that conditions within the Central Basin relating to natural and imported supplies of water are such that, without implementation of the water emergency provisions of this Judgment, the water resources of the Central Basin risk degradation. Such Declaration may be made as provided in Section III(A)(3).

"Disadvantaged Community" means any area that is served by a Water Purveyor and that consists of one or more contiguous census tracts which, based upon the most-recent United

States Census data, demonstrates a median household income which is less than eighty percent (80%) of the median household income for all Census Tracts within the state of California. The identification of Disadvantaged Communities shall be made by Watermaster following each decennial census.

"Extraction," "extractions," "extracting," "extracted," and other variations of the same noun and verb, mean pumping, taking, diverting or withdrawing groundwater by any manner or means whatsoever from Central Basin.

"Imported Water" means water brought into Central Basin Area from a non-tributary source by a party and any predecessors in interest, either through purchase directly from Metropolitan Water District of Southern California ("MWD"), the Central Basin Municipal Water District ("CBMWD"), or any other MWD member agency and additionally, as to the Department of Water and Power of the City of Los Angeles, water brought into the Central Basin Area by that party by means of the Owens River Aqueduct. In the case of water imported for storage by a party pursuant to this Judgment, "Imported Water" means water brought into the Central Basin from any non-tributary source as one method for establishing storage in the Central Basin.

"Imported Water Use Credit" is the annual amount, computed on a calendar year basis, of Imported Water which any party and any predecessors in interest, who have timely made the required filings under Water Code Section 1005.1, have imported into Central Basin Area in any calendar year and subsequent to July 9, 1951, for beneficial use therein, but not exceeding the amount by which that party and any predecessors in interest reduces his or their extractions of groundwater from Central Basin in that calendar year from the level of his or their extractions in the preceding calendar year, or in any prior calendar year not earlier than the calendar year 1950, whichever is the greater.

"Individual Storage Allocation" is defined in Section IV(D).

"Majority Protest" means a written protest filed with the Administrative Body of Watermaster within sixty (60) days following a protested event or decision, which evidences the concurrence of a majority of the Allowed Pumping Allocations held within the Basin as of the

date thereof.

"Material Physical Harm" means material physical injury or a material diminution in the quality or quantity of groundwater available within the Basin to support extraction of Total Water Rights or Stored Water, that is demonstrated to be attributable to the placement, recharge, injection, storage or recapture of Stored Water in the Central Basin, including, but not limited to, degradation of water quality, liquefaction, land subsidence and other material physical injury caused by elevated or lowered groundwater levels. Material Physical Harm does not include "economic injury" that results from other than direct physical causes, including any adverse effect on water rates, lease rates, or demand for water. Once fully mitigated, physical injury shall no longer be considered to be material.

"Natural Replenishment" means and includes all processes other than "Artificial Replenishment" by which water may become a part of the groundwater supply of Central Basin.

"Natural Safe Yield" is the maximum quantity of groundwater, not in excess of the long term average annual quantity of Natural Replenishment, which may be extracted annually from Central Basin without eventual depletion thereof or without otherwise causing eventual permanent damage to Central Basin as a source of groundwater for beneficial use, said maximum quantity being determined without reference to Artificial Replenishment.

"Outgoing Watermaster" is the State of California, Department of Water Resources, the Watermaster appointed pursuant to the terms of the Judgment before this Third Amendment.

"Overdraft" is that condition of a groundwater basin resulting from extractions in any given annual period or periods in excess of the long term average annual quantity of Natural Replenishment, or in excess of that quantity which may be extracted annually without otherwise causing eventual permanent damage to the basin.

"Party" means a party to this action. Whenever the term "party" is used in connection with a quantitative water right, or any quantitative right, privilege or obligation, or in connection with the assessment for the budget of the Watermaster, it shall be deemed to refer collectively to those parties to whom are attributed a Total Water Right in Part I of this Judgment.

"Person" or "persons" include individuals, partnerships, associations, governmental

agencies and corporations, and any and all types of entities.

"Recycled Water" means water that has been reclaimed through treatment appropriate for its intended use in compliance with applicable regulations.

"Regional Disadvantaged Communities Incentive Program" means a program to be developed by Watermaster in the manner provided in Section II(H) of this Judgment, and approved by the Court, whereby a portion of the Community Storage Pool is made available to or for the benefit of Disadvantaged Communities, on a priority basis within the Central Basin.

"Replenishment Assessment" means the replenishment assessment imposed by WRD upon each acre-foot of groundwater extracted from the Central Basin pursuant to WRD's enabling act, California Water Code §§ 60000 et seq.

"Small Water Producers Group" means a body consisting of parties holding no greater than 5,000 acre-feet of Allowed Pumping Allocation, as set forth on Appendix 3 hereto and as may be modified from time to time by the Group's own procedures and the requirements set forth in Appendix 3.

"Storage Panel" or "Central Basin Storage Panel" means a bicameral constituent body of Watermaster consisting of (i) the Central Basin Water Rights Panel and (ii) the Board of Directors of WRD.

"Storage Project" means an activity pertaining to the placement, recharge, injection, storage, transfer, or recapture of Stored Water within the Basin, but does not include actions by WRD undertaken in connection with its replenishment activities.

"Stored Water" means water, including Recycled Water, held within Available Dewatered Space as a result of spreading, injection, in-lieu delivery, or Carryover Conversion, where there is an intention to subsequently withdraw the water for reasonable and beneficial use pursuant to this Judgment.

"Total Water Right" is the quantity arrived at in the same manner as in the computation of "Base Water Right," but including as if extracted in any particular year the Imported Water Use Credit, if any, to which a particular party may be entitled.

"Water" includes only non-saline water, which is that having less than 1,000 parts of

chlorides to 1,000,000 parts of water.

"Water Augmentation Project" means pre-approved physical actions and management activities that provide demonstrated appreciable increases in long-term annual groundwater yield in the Basin that are initiated as provided in this Judgment after January 1, 2013.

"Water Purveyor" means a Party (and successors in interest) which sells water to the public, whether a regulated public utility, mutual water company or public entity. As that term is used in Section III(B)(6), "Water Purveyor," in addition to the foregoing, means a Party which has a connection or connections for the taking of Imported Water through the Metropolitan Water District of Southern California ("MWD"), or through a MWD-member agency, or access to such Imported Water through such connection, and which normally supplies at least a part of its customers' water needs with such Imported Water.

"Watermaster" is defined in Part II and is comprised of (i) the Administrative Body, (ii) the Central Basin Water Rights Panel, and (iii) the Central Basin Storage Panel. Watermaster, and the various constituent bodies of Watermaster, as designated in this Judgment, exist as a special master pursuant to this Judgment and Watermaster serves at the pleasure of the Court. Nothing herein shall be construed as creating an independent designation of "Watermaster" as a public agency subject to the provisions of CEQA, nor does membership or participation as the designated Watermaster expand any statutory, constitutional, or other powers of the members serving as part of the Watermaster.

"West Coast Basin" is the groundwater basin adjacent to the Central Basin which is the subject of a separate adjudication of groundwater rights in *California Water Service Company, et al. v. City of Compton, et al.*, Los Angeles Superior Court Case No. 506806.

"WRD" or "Water Replenishment District" is the plaintiff herein, the Water Replenishment District of Southern California, a special district of the State of California, which brought this action under its former name, "Central and West Basin Water Replenishment District."

In those instances where any of the above-defined words, terms, phrases or clauses are utilized in the definition of any of the other above-defined words, terms, phrases and clauses,

such use is with the same meaning as is above set forth.

NOW THEREFORE, IT IS ORDERED, DECLARED, ADJUDGED AND DECREED WITH RESPECT TO THE ACTION AND CROSS-ACTION AS FOLLOWS:

I. DECLARATION AND DETERMINATION OF WATER RIGHTS OF PARTIES; RESTRICTION ON THE EXERCISE THEREOF.[1]

A. Determination of Rights of Parties.

(1) Each party, except defendants The City of Los Angeles and Department of Water and Power of the City of Los Angeles, whose name is set forth in Appendix 2 and by this reference made a part hereof, and after whose name there appears under the column "Total Water Right" a figure other than "0," is the owner of and has the right to extract annually groundwater from Central Basin for beneficial use in the quantity set forth after that party's name under said column "Total Water Right" as of the close of the Administrative Year ending June 30, 2012 in accordance with the Watermaster Reports on file with this Court and the records of the Plaintiff. This tabulation does not take into account additions or subtractions from any Allowed Pumping Allocation of a producer for the 2012-2013 Administrative Year, nor other adjustments not representing change in fee title to water rights, such as leases of water rights, nor does it include the names of lessees of landowners where the lessees are exercising the water rights. The exercise of all water rights is subject, however, to the provisions of this Judgment as hereinafter contained. All of said rights are of the same legal force and effect and are without priority with reference to each other. Each party whose name is set forth in the tabulation in Appendix "2" of this

[1] Headings in the Judgment are for purposes of reference and the language of said headings do not constitute, other than for such purpose, a portion of this Judgment.

Judgment, and after whose name there appears under the column "Total Water Right" the figure "0," owns no rights to extract any groundwater from Central Basin, and has no right to extract any groundwater from Central Basin.

(2) Defendant The City of Los Angeles is the owner of the right to extract fifteen thousand (15,000) acre feet per annum of groundwater from Central Basin, but it has the right and ability to purchase or lease additional rights to extract groundwater and increase its Allowed Pumping Allocation. Defendant Department of Water and Power of the City of Los Angeles has no right to extract groundwater from Central Basin except insofar as it has the right, power, duty or obligation on behalf of defendant The City of Los Angeles to exercise the water rights in Central Basin of defendant The City of Los Angeles. The exercise of said rights is subject, however, to the provisions of this Judgment hereafter contained, including but not limited to, sharing with other parties in any subsequent decreases or increases in the quantity of extractions permitted from Central Basin, pursuant to continuing jurisdiction of the Court, on the basis that fifteen thousand (15,000) acre feet (and any increase in its Allowed Pumping Allocation) bears to the Allowed Pumping Allocations of the other parties.

(3) No party to this action is the owner of or has any right to extract groundwater from Central Basin except as herein affirmatively determined.

B. Parties Enjoined as to Quantities of Extractions.

(1) Each party, other than The State of California and The City of Los Angeles and Department of Water and Power of The City of Los Angeles, is enjoined and restrained in any Administrative Year commencing after the date this Judgment becomes final from extracting from Central Basin any quantity of Water greater than the party's Allowed Pumping Allocation as hereinafter set forth next to the name of the party in the tabulation appearing in Appendix 2 at the end of this Judgment, subject to further provisions of this Judgment. Subject to such further provisions, the officials, agents and employees of The State of

California are enjoined and restrained in any such Administrative Year from extracting from Central Basin collectively any quantity of water greater than the Allowed Pumping Allocation of The State of California as hereinafter set forth next to the name of that party in the same tabulation. Each party adjudged and declared above not to be the owner of and not to have the right to extract groundwater from Central Basin is enjoined and restrained in any Administrative Year commencing after the date this Judgment becomes final from extracting any groundwater from Central Basin, except as may be hereinafter permitted to any such party under this Judgment.

(2) The total extraction right for each party includes a party's Allowed Pumping Allocation (to the extent not transferred by agreement or otherwise), any contractual right acquired through lease or other agreement to extract or use the rights of another party, and any right to extract Stored Water or Carryover as provided in this Judgment. No party may extract in excess of 140% of the sum of (i) the party's Allowed Pumping Allocation and (ii) the party's leased water, except upon prior approval by the applicable body of Watermaster as required pursuant to Section IV(J)as provided herein. Upon application, the body specified in Section IV(J) shall approve a party's request to extract water in excess of such limit, provided there is no Material Physical Harm. Requests to extract water in excess of such limit shall be reviewed and either approved or denied within thirty (30) days of such request.

(3) Defendant The City of Los Angeles is enjoined and restrained in any Administrative Year commencing after the date this Judgment becomes final from extracting from Central Basin any quantity of water greater than fifteen thousand (15,000) acre feet or its Allowed Pumping Allocation, as recognized by the Watermaster, if it acquires additional rights to pump groundwater through purchase or lease, subject to further provisions of this Judgment, including but not limited to, sharing with other parties in any subsequent decreases or increases in

the quantity of extractions permitted from Central Basin by parties, pursuant to continuing jurisdiction of the Court, on the basis that fifteen thousand (15,000) acre feet (or the adjusted Allowed Pumping Allocation if additional rights are acquired) bears to the Allowed Pumping Allocations of the other parties. Defendant Department of Water and Power of The City of Los Angeles is enjoined and restrained in any Administrative Year commencing after the date this Judgment becomes final from extracting from Central Basin any quantity of water other than such as it may extract on behalf of defendant The City of Los Angeles, and which extractions, along with any extractions by said City, shall not exceed that quantity permitted by this Judgment to that City in any Administrative Year. Whenever in this Judgment the term "Allowed Pumping Allocation" appears, it shall be deemed to mean as to defendant The City of Los Angeles the quantity of fifteen thousand (15,000) acre feet unless the City of Los Angeles has acquired through purchase or lease right to extract additional groundwater. The limit on extraction as provided in the preceding Section I(B)(1) shall also apply to The City of Los Angeles.

(4) Any rights decreed and adjudicated herein may be transferred, assigned, licensed or leased by the owner thereof provided, however, that no such transfer shall be complete until compliance with the appropriate notice procedures established by Watermaster.

(5) Unless a party elects otherwise, production of water from the Basin for the use or benefit of the parties hereto shall be counted against the party's total extraction right in the following order: (i) Increased extractions by certain qualified water rights holders pursuant to Section IV(K), (ii) Exchange Pool production, (iii) production of Carryover water, (iv) production of leased water, , (v) production of Allowed Pumping Allocation, (vi) production of Stored Water, (vii) production of Drought Carryover (according to Watermaster's Rules), and (viii) production of water under an agreement with WRD during a period of

emergency pursuant to Section III(B)(6).

C. Parties Enjoined as to Export of Extractions.

Except as expressly authorized herein, or upon further order of the Court, all parties are enjoined and restrained from transporting water extracted from the Central Basin outside the boundaries of the Central Basin Area. For purposes of this Section, water supplied by a Water Purveyor to its customers located within any of its service areas contiguous to the Central Basin or within WRD's service area shall be exempt from the export prohibition of this Section provided that the Water Purveyor also provides water to a service area that overlies the Basin in whole or in part. The foregoing exemption is not made, nor is it related to, a determination of an underflow between the basins, a cost or benefit allocation, or any other factor relating to the allocation of the Replenishment Assessment by WRD. Further, this injunction and restriction does not apply to export of water that will take place pursuant to contractual obligations specifically identified on Appendix 4, nor does it apply to export of Stored Water not having its origin in Carryover Conversion. The export identified on Appendix 4 may continue to the extent that any such extraction does not violate any other provisions of this Judgment, provided however that no such export identified on Appendix 4 shall exceed 5,000 acre-feet in any Year.

II. APPOINTMENT OF WATERMASTER; WATERMASTER ADMINISTRATION PROVISIONS.

The particular bodies specified below are, jointly, hereby appointed Watermaster, for an indefinite term, but subject to removal by the Court, to administer this Judgment. Such bodies, which together shall constitute the "Watermaster," shall have restricted powers, duties and responsibilities as specified herein, it being the court's intention that particular constituent bodies of Watermaster have only limited and specified powers over certain aspects of the administration of this Judgment. The Outgoing Watermaster will exercise reasonable diligence in the complete transition of Watermaster duties and responsibilities within a reasonable time

following entry of this order, and to make available to the new Watermaster all records concerning Watermaster activities. The chair of the Central Basin Water Rights Panel (defined below) shall thereafter represent the Watermaster before the Court.

A. The Administrative Body.

Plaintiff Water Replenishment District of Southern California ("WRD") is appointed the Administrative Body of the Central Basin Watermaster ("Administrative Body"). In order to assist the Court in the administration of the provisions of this Judgment and to keep the Water Rights Panel and the Court fully advised in the premises, the Administrative Body shall have the following duties, powers and responsibilities:

(1) To Require Reports, Information and Records.

In consultation with the Water Rights Panel, the Administrative Body shall require the parties to furnish such reports, information and records as may be reasonably necessary to determine compliance or lack of compliance by any party with the provisions of this Judgment.

(2) Storage Projects.

The Administrative Body shall exercise such powers as may be specifically granted to it under this Judgment with regard to Stored Water.

(3) Annual Report.

The Administrative Body shall prepare, on or before the 15th day of the fourth month following the end of the preceding Administrative Year, an annual report for the consideration of the Water Rights Panel. The Chair of the Water Rights Panel shall submit to the Court either (1) the annual report prepared by the Administrative Body, following the adoption by the Water Rights Panel, or (2) an annual report separately prepared and adopted by the Water Rights Panel. The annual report prepared by the Administrative Body shall be limited to the following, unless otherwise required by the Court:

(a) Groundwater extractions

(b) Storage Accounts maintained by each party

(c) Status of the Regional Disadvantaged Community Incentive Program, if approved by the Court

(d) Exchange Pool operation

(e) Use of Imported Water

(f) Violations of this Judgment and corrective action taken by bodies of Watermaster having jurisdiction as provided in this Judgment

(g) Change of ownership of Total Water Rights

(h) Watermaster administration costs

(i) Water spread or imported into the Basin

(j) Water Augmentation Projects

(k) Whether the Administrative Body has become aware of the development of a Material Physical Harm, or imminent threat of the development of a Material Physical Harm, as required pursuant to Section IV(B) of this Judgment

(l) Other matters as agreed with the Water Rights Panel

(m) Recommendations, if any.

In consultation with the Water Rights Panel, the Administrative Body shall provide reasonable notice to all parties of all material actions or determinations by Watermaster or any constituent body thereof, and as otherwise provided by this Third Amended Judgment.

(4) Annual Budget and Appeal Procedure in Relation Thereto.

By April 1 of each Administrative Year, the Administrative Body shall prepare a proposed administrative budget for the subsequent year stating the anticipated expense for performing the administrative functions specified in this Judgment (the "Administrative Budget"). The Administrative Body shall mail a copy of the proposed Administrative Budget to each of the Parties at least 60 days

before the beginning of each Administrative Year. The Administrative Budget mailed to the Parties shall provide sufficient detail in the Administrative Budget to demonstrate a separation in accounting between the Administrative Budget and WRD's Replenishment Assessment and operating budget. For the first Administrative Year of operation under this Third Amended Judgment, if the Administrative Body is unable to meet the above time requirement, the Administrative Body shall mail said copies as soon as possible. The first year the Administrative Budget is prepared, the amount of that budget shall not exceed an amount equal to fifty percent (50%) of the 2012-2013 charge for Watermaster service for the Central Basin collected from Parties by the California Department of Water Resources. At all times, the Administrative Body shall maintain a separation in accounting between the Administrative Budget and WRD's Replenishment Assessment and operating budget. All increases in future budgets for the Administrative Body above the amount set forth above shall be subject to approval by the Water Rights Panel following a public meeting to be held prior to the beginning of the Administrative Year, provided that the approved budget shall not be less than the amount of the first-year budget for the Administrative Body, except upon further order of the Court. Any administrative function by WRD already paid for by the Replenishment Assessment shall not be added as an expense in the Administrative Budget. Similarly, any expense paid for by the Administrative Budget shall not be added to WRD's operating budget, or otherwise added to the calculation of the Replenishment Assessment. While WRD may approve the proposed Administrative Budget at the same meeting in which WRD adopts its annual Replenishment Assessment or annual budget, the Administrative Body's budget shall be separate and distinct from the Replenishment Assessment imposed pursuant to Water Code §60317 and WRD's operating budget.

If approval by the Water Rights Panel is required pursuant to the

foregoing, the Water Rights Panel shall act upon the proposed budget within 15 calendar days after the public meeting. If the Water Rights Panel does not approve the budget prior to such deadline, the matter may be appealed to the Court within sixty (60) days. If any Party hereto has any objection to the Administrative Budget, it shall present the same in writing to Watermaster within 15 days after the date of mailing of said tentative budget by the Administrative Body. The Parties shall make the payments otherwise required of them to the Administrative Body even though an appeal of such budget may be pending. Upon any revision by the Court, the Administrative Body shall either remit to the Parties their pro rata portions of any reduction in the budget, or shall credit their accounts with respect to their budget assessments for the next ensuing Administrative Year, as the Court shall direct.

The amount of the Administrative Budget to be assessed to each party shall be determined as follows: If that portion of the final budget to be assessed to the Parties is equal to or less than $20.00 per party then the cost shall be equally apportioned among the Parties. If that portion of the final budget to be assessed to Parties is greater than $20.00 per party then each Party shall be assessed a minimum of $20.00. The amount of revenue expected to be received through the foregoing minimum assessments shall be deducted from that portion of the final budget to be assessed to the Parties and the balance shall be assessed to the Parties having Allowed Pumping Allocation, such balance being divided among them proportionately in accordance with their respective Allowed Pumping Allocation.

Payment of the assessment provided for herein, subject to adjustment by the Court as provided, shall be made by each such party prior to beginning of the Administrative Year to which the assessment relates, or within 40 days after the mailing of the tentative budget, whichever is later. If such payment by any Party is not made on or before said date, the Administrative Body shall add a penalty of 5% thereof to such party's statement. Payment required of any Party hereunder

may be enforced by execution issued out of the Court, or as may be provided by order hereinafter made by the Court, or by other proceedings by the Watermaster or by any Party on the Watermaster's behalf.

Any money unexpended at the end of any Administrative Year shall be applied to the budget of the next succeeding Administrative Year. The Administrative Body shall maintain no reserves.

Notwithstanding the above, no part of the budget of the Administrative Body shall be assessed to WRD or to any Party who has not extracted water from Central Basin for a period of two successive Administrative Years prior to the Administrative Year in which the tentative budget should be mailed by the Administrative Body under the provisions of this subparagraph (4).

(5) Rules.

The Administrative Body may adopt, and amend from time to time, rules consistent with this Judgment as may be reasonably necessary to carry out duties under the provisions of this Judgment within its particular area of responsibility. The Body shall adopt its first set of rules and procedures within three (3) months following entry of this Third Amended Judgment. The rules shall be effective on such date after the mailing thereof to the Parties as is specified by the Body, but not sooner than thirty (30) days after such mailing.

B. The Central Basin Water Rights Panel.

The Central Basin Water Rights Panel of the Central Basin Watermaster ("Water Rights Panel") shall consist of seven (7) members, each of which is a Party. The term of each member of the Panel, with the exception of the seat held by the Small Water Producers Group, as provided herein, shall be limited to four years. The Court will make the initial appointments to the Central Basin Water Rights Panel upon motion by Parties consistent with the categories set forth below at or about the time of entry of this Third Amended Judgment, and shall establish a procedure for the staggered terms of such members. Thereafter, elections of members of the Panel shall be held as provided herein. One (1) such member of the Water Rights Panel shall be

elected by vote of the Small Water Producers Group conducted in accordance with its own procedures, provided such Group, as of the date of the election, consists of at least five (5) members who are Water Purveyors. One (1) such member of the Water Rights Panel shall be elected by vote of Parties with Allowed Pumping Allocation of less than 5,000 acre-feet who are not members of the Small Water Producers Group or, if the Small Water Producers Group does not then qualify following a continuous six-month period of non-qualification as provided herein, then two (2) such members shall be so selected. One (1) such member of the Water Rights Panel shall be elected by vote of Parties with Allowed Pumping Allocation of at least 5,000 acre-feet but less than 10,000 acre-feet. Three (3) such members of the Water Rights Panel shall be elected by vote of Parties with Allowed Pumping Allocation of 10,000 acre-feet or greater. One (1) such member of the Water Rights Panel shall be elected by a vote of all holders of Allowed Pumping Allocations, with each such holder being entitled to one vote, such member to be elected by a plurality of the votes cast, following a nomination procedure to be established in the Water Rights Panel's rules. In the event of a tie, the seventh member shall be determined as may be provided in the Water Rights Panel's rules, or otherwise by the court. Except as otherwise provided in this Section, each such rights holder shall have the right to cast a total number of votes equal to the number of acre-feet of its Allowed Pumping Allocation (rounded to the next highest whole number). With the exception of voting for the seventh member, Parties shall be entitled to vote only for candidates within the category(ies) that represent that Party's Allowed Pumping Allocation. For example, parties who are members of the Small Water Producers Group are entitled to vote only for the Small Water Producer Group member and the seventh member of the Water Rights Panel, and so on. Parties are not permitted to split votes. The results of such election shall be reported to the Court for confirmation of each member's appointment to the Water Rights Panel of Watermaster. The elected members of the Water Rights Panel shall be those candidates receiving the highest vote total in their respective categories. The Water Rights Panel shall hold its first meeting within thirty (30) days of the date this Third Amended Judgment becomes final. The Water Rights Panel shall develop rules for its operation consistent with this Judgment. The Water Rights Panel shall take action, including the

election of its Chair, by majority vote of its members. Election of the Chair shall occur every two years, with no Party serving as Chair for consecutive terms. Members of the Water Rights Panel shall serve without compensation. All references to Annual Pumping Allocation, as used herein, are as determined by the last published Watermaster report.

(1) The Water Rights Panel shall have the following duties and responsibilities:

(a) Enforcement of Adjudicated Rights. As against the other bodies of Watermaster, the Water Rights Panel shall have exclusive authority to move the Court to take such action as may be necessary to enforce the terms of the Judgment with regard to the extraction of Allowed Pumping Allocation and the maintenance of adjudicated groundwater extraction rights as provided in this Judgment.

(b) Requirement of Measuring Devices. The Water Rights Panel shall require all parties owning or operating any facilities for the extraction of groundwater from Central Basin to install and maintain at all times in good working order at such party's own expense, appropriate measuring devices at such times and as often as may be reasonable under the circumstances and to calibrate or test such devices.

(c) Inspections by Watermaster. The Water Rights Panel may make inspections of groundwater production facilities, including aquifer storage and recovery facilities, and measuring devices at such times and as often as may be reasonable under the circumstances and to calibrate or test such devices.

(d) Reports. Annually, the Water Rights Panel, in cooperation with the Administrative Body, shall report to the Court, concerning any or all of the following:

(i) Groundwater extractions

(ii) Exchange Pool operation

(iii) Status of the Regional Disadvantaged Community Incentive Program, if approved by the Court

(iv) Violations of this Judgment and corrective action taken or sought

(v) Change of ownership of Total Water Rights

(vi) Assessments made by the Water Rights Panel and any costs incurred

(vii) Whether the Water Rights Panel has become aware of the development of a Material Physical Harm, or imminent threat of the development of a Material Physical Harm, as required pursuant to Section IV(B) of this Judgment

(viii) Recommendations, if any.

As provided in Section II.A(3), the Water Rights Panel may adopt the annual report prepared by the Administrative Body, and submit the same to the Court, or the Water Rights Panel may prepare, adopt and submit to the Court a separate report. The Chair of the Water Rights Panel shall be responsible for reporting to the Court concerning adjudicated water rights issues in the Basin.

(2) Assessment. The Water Rights Panel shall assess holders of water rights within the Central Basin an annual amount not to exceed $1.00 per acre-foot of Allowed Pumping Allocation, by majority vote of the members of the Water Rights Panel. The body may assess a higher amount, subject to being overruled by Majority Protest. The assessment is intended to cover any costs associated with reporting responsibilities, any Judgment enforcement action, and the review of storage projects as a component of the "Storage Panel" as provided below. It is anticipated that this body will rely on the Administrative Body's staff for the functions related to the Administrative Body's responsibilities, but the

Water Rights Panel may engage its own staff if required in its reasonable judgment. Assessments will constitute a lien on the water right assessed, enforceable as provided in this Judgment.

(3) Rules. The Water Rights Panel may adopt and amend from time to time, at an open meeting of that Panel, rules consistent with this Judgment as may be reasonably necessary to carry out duties under the provisions of this Judgment within its particular area of responsibility. The Panel shall adopt its first set of rules and procedures within three (3) months following entry of this Third Amended Judgment. The rules shall be effective on such date after the mailing thereof to the Parties as is specified by the Panel, but not sooner than thirty (30) days after such mailing.

C. The Storage Panel.

The Storage Panel of the Central Basin Watermaster ("Storage Panel") shall be a bicameral body consisting of (i) the Water Rights Panel and (ii) the Board of Directors of WRD. Action by the Storage Panel shall require separate action by a majority of each of its constituent bodies. The Storage Panel shall have the duties and responsibilities specified with regard to the Provisions for the Storage and Extraction of Stored Groundwater as set forth in Part IV and the other provisions of this Judgment.

D. Use of Facilities and Data Collected by Other Governmental Agencies.

Where practicable, the three bodies constituting the Central Basin Watermaster should not duplicate the collection of data relative to conditions of the Central Basin which is then being collected by one or more governmental agencies, but where necessary each such body may collect supplemental data. Where it appears more economical to do so, the Watermaster and its constituent bodies are directed to use such facilities of other governmental agencies as are available to it under either no cost or cost agreements with respect to the receipt of reports, billings to parties, mailings to parties, and similar matters.

E. Appeal from Watermaster Decisions.

Appeals concerning the budget proposed by the Administrative Body shall be governed by Section II(A)(4) of this Judgment. Appeals concerning decisions by the Storage Panel shall be governed by Section IV(P) of this Judgment. With respect to all other objections by a Party to any action or decision by the Watermaster, such objections will be governed by this Section II(E). Any party interested therein who objects to any rule, determination, order or finding made by the Watermaster or any constituent body thereof, may object thereto in writing delivered to the Administrative Body within 30 days after the date the Watermaster, or any constituent body thereof, mails written notice of the making of such rule, determination, order or finding. Within 30 days after such delivery the Watermaster, or the affected constituent body thereof, shall consider said objection and shall amend or affirm his rule, determination, order or finding and shall give notice thereof to all parties. Any such party may file with the Court within 60 days from the date of said notice any objection to such rule, determination, order or finding of the Watermaster, or any constituent body thereof, and bring the same on for hearing before the Court at such time as the Court may direct, after first having served said objection upon all other parties. The Court may affirm, modify, amend or overrule any such rule, determination, order or finding of the Watermaster or its affected constituent body. Any objection under this paragraph shall not stay the rule, determination, order or finding of the Watermaster. However, the Court, by *ex parte* order, may provide for a stay thereof on application of any interested party on or after the date that any such party delivers to the Watermaster any written objection.

F. Effect of Non-Compliance by Watermaster With Time Provisions.

Failure of the Watermaster to perform any duty, power or responsibility set forth in this Judgment within the time limitation herein set forth shall not deprive the Watermaster or its applicable constituent body of authority to subsequently discharge such duty, power or responsibility, except to the extent that any such failure by the Watermaster may have rendered some otherwise required act by a party impossible.

G. Limitations on Administrative Body.

WRD shall not acquire Central Basin water rights, nor lease Central Basin water or water rights to or from any Party or third party. However, the foregoing shall (i) not be interpreted to restrict WRD's ability or authority to acquire water from any source for purposes of Artificial or Natural Replenishment or for water quality activities, and (ii) not restrict WRD's authority under California Water Code Section 60000 et seq. to develop reclaimed, recycled or remediated water for groundwater replenishment activities.

H. Regional Disadvantaged Communities Incentive Program.

The Water Rights Panel, acting through the General Manager of WRD, shall develop a Regional Disadvantaged Communities Incentive Program, pursuant to which a portion of the Community Storage Pool is reserved for the benefit of Disadvantaged Communities within the Central Basin. Nothing in this Judgment, nor the establishment of such a program, shall diminish the rights otherwise granted to Parties under this Judgment, including but not limited to the right to place water in storage in the Community Storage Pool. The Water Rights Panel shall meet within thirty (30) days of its formation to identify and consider potential third-party independent consultants who may be retained to design the program, including those recommended by the General Manager of WRD. The Water Rights Panel shall select a consultant within thirty (30) days thereafter. In the event the General Manager of WRD objects to the selected consultant, in writing, then the Water Rights Panel and the General Manager of WRD shall exchange a list of no more than two (2) consultants each for further consideration. If the Water Rights Panel and the General Manager of WRD are unable to agree to a consultant within an additional thirty (30) days, then the Chair of the Water Rights Panel shall file a request with the Court for an order appointing a consultant. Upon selection of a third-party independent consultant, whether through the Water Rights Panel process or the court process identified herein, the consultant shall design a detailed program and deliver it to the Water Rights Panel within ninety (90) days of the consultant's retention. All costs associated with design of the program shall be paid for out of the Water Rights

Panel's assessment, as provided in Section II.B(2). The Water Rights Panel shall present the program to the Court for its review and approval within one year of entry of this Third Amended Judgment. If approved by the Court, the Water Rights Panel, acting through the General Manager of WRD, shall be responsible for administration of the Regional Disadvantaged Communities Incentive Program, including insuring that any funds generated through the program benefit Disadvantaged Communities. Any Storage Project established pursuant to this Program shall have priority to use up to 23,000 acre-feet of Available Storage within the Community Storage Pool, as further provided in Section IV.E(2). Watermaster shall report to the Court concerning such program as a part of its annual report.

III. PROVISIONS FOR PHYSICAL SOLUTION TO MEET THE WATER REQUIREMENTS IN CENTRAL BASIN.

In order to provide flexibility to the injunction set forth in Part I of the Judgment, and to assist in a physical solution to meet water requirements in Central Basin, the injunction so set forth is subject to the following provisions.

A. Carryover of Portion of Allowed Pumping Allocation.

(1) Amount of Carryover.

Each party adjudged to have a Total Water Right or water rights and who, during a particular Administrative Year, does not extract from Central Basin a total quantity equal to such party's Allowed Pumping Allocation for the particular Administrative Year, less any allocated subscriptions by such party to the Exchange Pool, or plus any allocated requests by such party for purchase of Exchange Pool water, is permitted to carry over (the "One Year Carryover") from such Administrative Year the right to extract from Central Basin in the next succeeding Administrative Year so much of said total quantity as it did not extract in the particular Administrative Year, not to exceed (i) the Applicable Percentage of such party's Allowed Pumping Allocation for the particular Administrative

Year, or 20 acre-feet, whichever of said percentage or 20 acre-feet is the larger, less (ii) the total quantity of water then held in that party's combined Individual and Community Storage accounts, as hereinafter defined, but in no event less than 20% of the party's Allowed Pumping Allocation for the particular Administrative Year. For purposes of this Section, the "Applicable Percentage" shall be as follows for the years indicated:

For the Administrative Year in which this Third Amended Judgment becomes final:	30%
For the next Administrative Year:	40%
For the next Administrative Year:	50%
For the next Administrative Year and years following:	60%

(2) Conversion of Carryover to Stored Water.

A party having Carryover may, from time to time, elect to convert all or part of such party's Carryover to Stored Water as authorized herein ("Carryover Conversion") upon payment of the Replenishment Assessment to WRD. Such Stored Water shall be assigned to that party's Individual Storage Allocation, if available, and otherwise to the Community Storage Pool.

(3) Declared Water Emergency.

The Board of Directors of WRD may, from time to time, declare a water emergency upon a determination that conditions within the Central Basin relating to natural and imported water supplies are such that, without implementation of the Declared Water Emergency provisions of this subsection, the water resources of the Central Basin risk degradation. In making such declaration, the Board of Directors shall consider any information and requests provided by water producers, purveyors and other affected entities and shall, for that purpose, hold a public hearing in advance of such declaration. A Declared Water Emergency

shall extend to the end of the Administrative Year during which such resolution is adopted, unless sooner ended by similar resolution.

(4) Drought Carryover.

Following the declaration of a Declared Water Emergency and until the Declared Water Emergency ends either by expiration or by resolution of the Board of Directors of WRD, each party adjudged to have a Total Water Right or water rights and who, during a particular Administrative Year, does not extract from Central Basin a total quantity equal to such party's Allowed Pumping Allocation for the particular Administrative Year, less any allocated subscriptions by such party to the Exchange Pool, or plus any allocated requests by such party for purchase of Exchange Pool water, is permitted to carry over (the "Drought Carryover") from such Administrative Year the right to extract from Central Basin so much of said total quantity as it did not extract during the period of the Declared Water Emergency, to the extent such quantity exceeds the One Year Carryover, not to exceed an additional 35% of such party's Allowed Pumping Allocation, or additional 35 acre feet, whichever of said 35% or 35 acre feet is the larger, less the amount of such party's Stored Water. Carryover amounts shall first be allocated to the One Year Carryover and any remaining carryover amount for that year shall be allocated to the Drought Carryover.

(5) Accumulated Drought Carryover.

No further amounts shall be added to the Drought Carryover following the end of the Declared Water Emergency, provided however that in the event another Declared Water Emergency is declared, additional Drought Carryover may be added, to the extent such additional Drought Carryover would not cause the total Drought Carryover to exceed the limits set forth above. The Drought Carryover shall be supplemental to and shall not affect any previous drought carryover acquired by a party pursuant to previous order of the court.

B. When Over-Extractions May be Permitted.

(1) Underestimation of Requirements for Water.

Any party hereto without Stored Water, having an Allowed Pumping Allocation, and not in violation of any provision of this Judgment may extract in an Administrative Year an additional quantity of water not to exceed: (a) 20% of such party's Allowed Pumping Allocation or 20 acre feet, whichever is greater, and (b) any amount in addition thereto which may be approved in advance by the Water Rights Panel of Watermaster.

(2) Reductions in Allowed Pumping Allocations in Succeeding Years to Compensate for Permissible Overextractions.

Any such party's Allowed Pumping Allocation for the following Administrative Year shall be reduced by the amount over-extracted pursuant to paragraph 1 above, provided that if the Water Rights Panel determines that such reduction in the party's Allowed Pumping Allocation in one Administrative Year will impose upon such a party an unreasonable hardship, the said reduction in said party's Allowed Pumping Allocation shall be prorated over a period of five (5) Administrative Years succeeding that in which the excessive extractions by the party occurred. Application for such relief to the Water Rights Panel must be made not later than the 40th day after the end of the Administrative Year in which such excessive pumping occurred. The Water Rights Panel shall grant such relief if such over-extraction, or any portion thereof, occurred during a period of Declared Water Emergency.

(3) Reductions in Allowed Pumping Allocations for the Next Succeeding Administrative Year to Compensate for Overpumping.

Whenever, pursuant to Section III(B)(1), a party over-extracts in excess of such party's Allowed Pumping Allocation plus that party's available One-Year Carryover and any Stored Water held by that party, and such excess has not been approved in advance by the Water Rights Panel, then such party's Allowed Pumping Allocation for the following Administrative Year shall be reduced by an

amount equivalent to its total over-extractions in the particular Administrative Year in which it occurred.

(4) Reports of Certain Over-extractions to the Court.

Whenever a party over-extracts in excess of 20% of such party's Allowed Pumping Allocation for the particular Administrative Year plus that party's available One-Year Carryover and any Stored Water held by that party, without having obtained prior approval of the Water Rights Panel, such shall constitute a violation of the Judgment and the Water Rights Panel shall make a written report to the Court for such action as the Court may deem necessary. Such party shall be subject to such injunctive and other processes and action as the Court might otherwise take with regard to any other violation of such Judgment.

(5) Effect of Over-extractions on Rights.

Any party who over-extracts from Central Basin in any Administrative Year shall not acquire any additional rights by reason of such over-extractions; nor shall any required reductions in extractions during any subsequent years reduce the Total Water Right or water rights of any party to the extent said over-extractions are in compliance with paragraph 1 above.

(6) Pumping Under Agreement With Plaintiff During Periods of Emergency.

Plaintiff WRD overlies Central Basin and engages in activities of replenishing the groundwaters thereof. Plaintiff by resolution has appropriated for use during emergencies the quantity of 17,000 acre feet of imported and reclaimed water replenished by it into Central Basin, and pursuant to such resolution Plaintiff reserves the right to use or cause the use of such quantity during such emergency periods for the benefit of Water Purveyors.

(a) Notwithstanding any other provision of this Judgment, parties who are Water Purveyors (including successors in interest) are authorized to enter into agreements with Plaintiff for extraction of a

portion of Plaintiff's 17,000 acre-feet of appropriated water, in excess of their respective Allowed Pumping Allocations for the particular Administrative Year when the following conditions are met:

(i) Plaintiff is in receipt of a resolution of the Board of Directors of the Metropolitan Water District of Southern California ("MWD") that there is an actual or immediately threatened temporary shortage of MWD's imported water supply compared to MWD's needs, or a temporary inability to deliver MWD's imported water supply throughout its area, which will be alleviated by overpumping from Central Basin.

(ii) The Board of Directors of both Plaintiff and Central Basin Municipal Water District by resolutions concur in the resolution of MWD's Board of Directors, and the Board of Directors of Plaintiff finds in its resolution that the average minimum elevation of water surface among those wells in the Montebello Forebay of the Central Basin designated as Los Angeles County Flood Control District Wells Nos. 1601T, 1564P, 1615P, and 1626L, is at least 43.7 feet above sea level. This computation shall be based upon the most recent "static readings" taken, which shall have been taken not more than four weeks prior. Should any of the wells designated above become destroyed or otherwise be in a condition so that readings cannot be made, or should the owner prevent their use for such readings, the Board of Directors of the Plaintiff may, upon appropriate engineering recommendation, substitute such other well or wells as it

may deem appropriate.

(iii) In said resolution, Plaintiff's Board of Directors sets a public hearing, and notice of the time, place and date thereof (which may be continued from time to time without further notice) is given by First Class Mail to the current designees of the Parties, filed and served in accordance with Section VI(C) of this Judgment. Said notice shall be mailed at least five (5) days before the scheduled hearing date.

(iv) At said public hearing, parties (including successors in interest) are given full opportunity to be heard, and at the conclusion thereof the Board of Directors of Plaintiff by resolution decides to proceed with agreements under this Section III(B)(6).

(b) All such agreements shall be subject to the following requirements, and such others as Plaintiff's Board of Directors shall require:

(i) They shall be of uniform content except as to quantity involved, and any special provisions considered necessary or desirable with respect to local hydrological conditions or good hydrologic practice.

(ii) They shall be offered to all Water Purveyors, excepting those which Plaintiff's Board of Directors determines should not overpump because such overpumping would occur in undesirable proximity to a sea water barrier project designed to forestall sea water intrusion, or within or in undesirable proximity to an area within Central Basin wherein groundwater levels are at an

elevation where overpumping is under all the circumstances then undesirable.

(iii) The maximum terms for the agreements shall be four (4) months, which agreements shall commence on the same date and end on the same date (and which may be executed at any time within the four-month period), unless an extension thereof is authorized by the Court, under Part V of this Judgment.

(iv) They shall contain provisions requiring that the Water Purveyor executing the agreement pay to the Plaintiff a price in addition to the applicable replenishment assessment determined on the following formula. The normal price per acre-foot of Central Basin Municipal Water District's (CBMWD) treated domestic and municipal water, as "normal" price of such category of water is defined in Section III(C)(10) (price to be paid for Exchange Pool Water) as of the beginning of the contract term less the deductions set forth in said paragraph 10 for the Administrative Year in which the contract term commences. The agreement shall provide for adjustments in the first of said components for any proportional period of the contract term during which the CBMWD said normal price is changed, and if the agreement straddles two administrative years, the said deductions shall be adjusted for any proportionate period of the contract term in which the amount thereof or of either subcomponent changes for purposes of said paragraph 10. Any price for a partial acre-foot shall be computed pro rata. Payments shall be due and

payable on the principle that over extractions under the agreement are of the last water pumped in the Administrative Year, and shall be payable as the agreement shall provide.

(v) They shall contain provisions that: (1) All of such agreements (but not less than all) shall be subject to termination by Plaintiff if, in the Judgment of Plaintiff's Board of Directors, the conditions or threatened conditions upon which they were based have abated to the extent over extractions are no longer considered necessary; and (2) that any individual agreement or agreements may be terminated if the Plaintiff's Board of Directors finds that adverse hydrologic circumstances have developed as a result of over extractions by any Water Purveyor(s) which have executed said agreements, or for any other reason that Plaintiff's Board of Directors finds good and sufficient.

(c) Other matters applicable to such agreements and overpumping thereunder are as follows, without need for express provisions in the agreements;

(i) The quantity of overpumping permitted shall be additional to that which the Water Purveyor could otherwise overpump under this Judgment.

(ii) The total quantity of permitted overpumping under all said agreements during said four months shall not exceed seventeen thousand (17,000) acre feet, but the individual Water Purveyor shall not be responsible or affected by any violation of this requirement. That total is additional to over extractions otherwise permitted under

this Judgment.

(iii) Only one four month period may be utilized by Plaintiff in entering into such agreements, as to any one emergency or continuation thereof declared by MWD's Board of Directors under Section III(B)(6)(a).

(iv) If any party claims it is being damaged or threatened with damage by the over extractions by any party to such an agreement, the first party or the Water Rights Panel may seek appropriate action of the Court for termination of any such agreement upon notice of hearing to the party complaining, to the party to said agreement, to the plaintiff, and to any parties who have filed a request for special notice. Any termination shall not affect the obligation of the party to make payments under the agreement for over extractions which did occur thereunder.

(v) Plaintiff shall maintain separate accounting of the proceeds from payments made pursuant to agreements entered into under this Part. Said fund shall be utilized solely for purposes of replenishment in replacement of waters in Central Basin and West Basin. Plaintiff shall as soon as practicable cause replenishment in Central Basin by the amounts to be overproduced pursuant to this Paragraph 6, whether through spreading, injection, or in lieu agreements.

(vi) Over extractions pursuant to the agreements shall not be subject to the "make up" provisions of the Judgment as amended, provided that if any party fails to make payments as required by the agreement, Plaintiff may

require such "make up" under Section III(B)(3) of this Judgment.

(vii) A Water Purveyor under any such agreement may, and is encouraged to enter into appropriate arrangements with customers who have water rights in Central Basin under or pursuant to this Judgment whereby the Water Purveyor will be assisted in meeting the objectives of the agreement.

(7) Exemption for Extractors of Contaminated Groundwater.

Any party herein may petition WRD for a Non-consumptive Water Use Permit as part of a project to remedy or ameliorate groundwater contamination. If the petition is granted as set forth in this paragraph, the petitioner may extract the groundwater as permitted hereinafter, without the production counting against the petitioner's production rights.

(a) If the Board of WRD determines by Resolution that there is a problem of groundwater contamination that a proposed program will remedy or ameliorate, an operator may make extractions of groundwater to remedy or ameliorate that problem without the production counting against the petitioner's production rights if the water is not applied to beneficial surface use, its extractions are made in compliance with all the terms and conditions of the Board Resolution, and the Board has determined in the Resolution either of the following:

(i) The groundwater to be extracted is unusable and cannot be economically treated or blended for use with other water.

(ii) The proposed program involves extraction of usable water in the same quantity as will be returned to the

underground without degradation of quality.

(b) The Resolution may provide those terms and conditions the Board deems appropriate, including, but not limited to, restrictions on the quantity of the extractions to be so exempted, limitations on time, periodic reviews, requirement of submission of test results from a Board-approved laboratory, and any other relevant terms or conditions.

(c) Upon written notice to the operator involved, the Board may rescind or modify its Resolution. The rescission or modification of the Resolution shall apply to groundwater extractions occurring more than ten (10) days after the rescission or modification. Notice of rescission or modification shall be either mailed first class mail, postage prepaid, at least two weeks prior to the meeting of the Board at which the rescission or modification will be made to the address of record of the operator or personally delivered two weeks prior to the meeting.

(d) The Board's decision to grant, deny, modify or revoke a permit or to interrupt or stop a permitted project may be appealed to this court within thirty days of the notice thereof to the applicant and upon thirty days' notice to the designees of all parties herein.

(e) WRD shall monitor and periodically inspect the project for compliance with the terms and conditions for any permit issued pursuant to these provisions.

(f) No party shall recover costs from any other party herein in connection with determinations made with respect to this Part.

(8) "Call" on Carryover Converted to Stored Water.

Where any Party has elected, as permitted by Section III(A)(2), to convert Carryover to Stored Water, any other Party which has not, within the previous ten (10) years, been granted approval to extract Carryover Conversion under this

Section III(B)(8) more than five (5) times, may apply to the Storage Panel for the right to extract all or a portion of that Carryover Conversion in the year such Conversion occurs. The Storage Panel shall grant such request, providing there is no Material Physical Harm, if it determines that leased groundwater to meet the applicant's needs within the Basin cannot be obtained for less than forty-five percent (45%) of MWD's Imported Water rate for delivery of untreated water to the Central Basin spreading facilities (which rate is presently MWD's "Full Service Untreated Volumetric Cost, Tier 1"), and that the applicant will fully extract its Allowed Pumping Allocation, Carryover, and Stored Water, if any, in addition to its permitted overextraction under Section III(B)(1), prior to accessing such Carryover Conversion.

Upon such approval, the applicant may thereafter extract such water as provided herein. A Party so extracting groundwater shall fully restore such extracted water (either through under-extraction of its rights or through importing water) during the five-year period following the Year in which the extraction under this Section occurs. Otherwise, the extracting Party shall pay to the Watermaster an amount equal to 100% of MWD's Imported Water rate for purchase and delivery of untreated water to the Central Basin spreading facilities (which rate is presently MWD's "Full Service Untreated Volumetric Cost, Tier 1") whether or not such water is available that year, for the year during which is the fifth anniversary of the year during which such Carryover Conversion extraction occurs, multiplied by the amount of Carryover Conversion so extracted and not restored during such five-year period. Payment shall be made within thirty (30) days of demand by Watermaster. No Replenishment Assessment shall be due on Carryover Conversion so extracted. However, the Party must deposit with the Watermaster an amount equal to the Replenishment Assessment that would otherwise be imposed by WRD upon such extraction. If the party restores the water within the 5-year repayment period, then the Watermaster shall

promptly return the deposit to the Party, without interest. If the Party does not restore the water within the 5-year repayment period, the deposit shall be credited towards the Party's obligation to pay 100% of MWD's Imported Water rate as required herein.

Should there be multiple requests to so extract Carryover Conversion in the same year, the Storage Panel shall allocate such extraction right such that each requesting party may extract a pro rata portion of the available Carryover Conversion for that year. No party may extract in excess of 2,500 acre feet of groundwater pursuant to this Section III(B)(8) in a single Year. Amounts paid to Watermaster hereunder shall be used by WRD solely for purchase of water for replenishment in the Basin. Watermaster, through the Storage Panel, shall give reasonable notice to the Parties of any application to so extract Carryover Conversion in such manner as the Storage Panel shall determine, including, without limitation, notice by electronic mail or by website posting, at least ten (10) days prior to consideration of any such application.

C. Exchange Pool Provisions.

(1) Definitions.

For purposes of these Exchange Pool provisions, the following words and terms have the following meanings:

(a) "Exchange Pool" is the arrangement hereinafter set forth whereby certain of the parties, ("Exchangees") may, notwithstanding the other provisions of the Judgment, extract additional water from Central Basin to meet their needs, and certain other of the parties ("Exchangors"), reduce their extractions below their Allowed Pumping Allocations in order to permit such additional extractions by others.

(b) "Exchangor" is one who offers, voluntarily or otherwise, pursuant to subsequent provisions, to reduce its extractions below its Allowed Pumping Allocation in order to permit such additional

extractions by others.

(c) "Exchangee" is one who requests permission to extract additional water from Central Basin.

(d) "Undue hardship" means unusual and severe economic or operational hardship, other than that arising (i) by reason of any differential in quality that might exist between water extracted from Central Basin and water available for importation or (ii) by reason of any difference in cost to a party in subscribing to the Exchange Pool and reducing its extractions of water from Central Basin in an equivalent amount as opposed to extracting any such quantity itself.

(2) Parties Who May Purchase Water Through the Exchange Pool.

Any party not having existing facilities for the taking of imported water as of the beginning of any Administrative Year, and any party having such facilities as of the beginning of any Administrative Year who is unable, without undue hardship, to obtain, take, and put to beneficial use, through its distribution system or systems existing as of the beginning of the particular Administrative Year, imported water in a quantity which, when added to its Allowed Pumping Allocation for that particular Administrative Year, will meet its estimated needs for that particular Administrative Year, may purchase water from the Exchange Pool, subject to the limitations contained in this Section III(C) (Subpart "C" hereinafter).

(3) Procedure for Purchasing Exchange Pool Water.

Not later than the 40th day following the commencement of each Administrative Year, each such party desiring to purchase water from the Exchange Pool shall file with the Watermaster a request to so purchase, setting forth the amount of water in acre feet that such party estimates that it will require during the then current Administrative Year in excess of the total of:

(a) Its Allowed Pumping Allocation for that particular

Administrative Year; and

(b) The imported water, if any, which it estimates it will be able, without undue hardship, to obtain, take and put to beneficial use, through its distribution system or systems existing as of the beginning of that particular Administrative Year.

Any party who as of the beginning of any Administrative Year has existing facilities for the taking of imported water and who makes a request to purchase from the Exchange Pool must provide with such request substantiating data and other proof which, together with any further data and other proof requested by the Water Rights Panel, establishes that such party is unable without undue hardship, to obtain, take and put to beneficial use through its said distribution system or systems a sufficient quantity of imported water which, when added to its said Allowed Pumping Allocation for the particular Administrative Year, will meet its estimated needs. As to any such party, the Water Rights Panel shall make a determination whether the party has so established such inability, which determination shall be subject to review by the court under the procedure set forth in Part II of this Judgment. Any party making a request to purchase from the Exchange Pool shall either furnish such substantiating data and other proof, or a statement that such party had no existing facilities for the taking of imported water as of the beginning of that Administrative Year, and in either event a statement of the basis for the quantity requested to be purchased.

(4) Subscriptions to Exchange Pool.

(a) Required Subscription. Each party having existing facilities for the taking of imported water as of the beginning of any Administrative Year hereby subscribed to the Exchange Pool for purposes of meeting Category (a) requests thereon, as more particularly defined in paragraph 5 of this Subpart C, twenty percent

(20%) of its Allowed Pumping Allocation, or the quantity of imported water which it is able, without undue hardship, to obtain, take and put to beneficial use through its distribution system or systems existing as of the beginning of the particular Administrative Year in addition to such party's own estimated needs for imported water during that Administrative Year, whichever is the lesser. A party's subscription under this subparagraph (a) and subparagraph (b) of this paragraph 4 is sometimes hereinafter referred to as a "required subscription."

(b) Report to Watermaster Water Rights Panel by Parties with Connections and Unable to Subscribe 20%. Any party having existing facilities for the taking of imported water and estimating that it will be unable, without undue hardship, in that Administrative Year to obtain, take and put to beneficial use through its distribution system or systems existing as of the beginning of that Administrative Year, sufficient imported water to further reduce its extractions from the Central Basin by twenty percent (20%) of its Allowed Pumping Allocation for purposes of providing water to the Exchange Pool must furnish not later than the 40th day following the commencement of such Administrative Year substantiating data and other proof which, together with any further data and other proof requested by the Water Rights Panel, establishes said inability or such party shall be deemed to have subscribed twenty percent (20%) of its Allowed Pumping Allocation for the purpose of providing water to the Exchange Pool. As to any such party so contending such inability, the Water Rights Panel shall make a determination whether the party has so established such inability, which determination shall be subject to review by the Court under the procedure set forth in Part II of this Judgment.

(c) Voluntary Subscriptions. Any party, whether or not having

facilities for the taking of imported water, who desires to subscribe to the Exchange Pool a quantity or further quantity of its Allowed Pumping Allocation, may so notify the Water Rights Panel in writing of the quantity of such offer on or prior to the 40th day following the commencement of the particular Administrative Year. Such subscriptions are referred to hereinafter as "voluntary subscriptions." Any Exchangor who desires that any part of its otherwise required subscription not needed to fill Category (a) requests shall be available for Category (b) requests may so notify the Water Rights Panel in writing on or prior to said 40th day. If all of that Exchangor's otherwise required subscription is not needed in order to fill Category (a) requests, the remainder of such required subscription not so used, or such part thereof as such Exchangor may designate, shall be deemed to be a voluntary subscription.

(5) Limitations on Purchases of Exchange Pool Water and Allocation of Requests to Purchase Exchange Pool Water Among Exchangors.

(a) Categories of Requests. Two categories of Exchange Pool requests are established as follows:

(i) Category (a) requests. The quantity requested by each Exchangee, whether or not that Exchangee has an Allowed Pumping Allocation, which quantity is not in excess of 150% of its Allowed Pumping Allocation, if any, or 100 acre feet, whichever is greater. Requests or portions thereof within the above criteria are sometimes hereinafter referred to as "Category (a) requests."

(ii) Category (b) requests. The quantity requested by each Exchangee having an Allowed Pumping Allocation to the extent the request is in excess of 150% of that Allowed

Pumping Allocation or 100 acre feet, whichever is greater, and the quantity requested by each Exchangee having no Allowed Pumping Allocation to the extent the request is in excess of 100 acre feet. Portions of requests within the above criteria are sometimes hereinafter referred to as "Category (b) requests."

(b) Filling of Category (a) Requests. All Exchange Pool subscriptions, required and voluntary, shall be available to fill Category (a) requests. Category (a) requests shall be filled first from voluntary subscriptions, and if voluntary subscriptions should be insufficient to fill all Category (a) requests required subscriptions shall be then utilized to fill Category (a) requests. All Category (a) requests shall be first filled before any Category (b) requests are filled.

(c) Filling of Category (b) Requests. To the extent that voluntary subscriptions have not been utilized in filling Category (a) requests, Category (b) requests shall be filled only out of any remaining voluntary subscriptions. Required subscriptions will then be utilized for the filling of any remaining Category (b) requests.

(d) Allocation of Requests to Subscriptions When Available Subscriptions Exceed Requests. In the event the quantity of subscriptions available for any category of requests exceeds those requests in that category, or exceeds the remainder of those requests in that category, such requests shall be filled out of such subscriptions proportionately in relation to the quantity of each subscription.

(e) Allocation of Subscriptions to Category (b) Requests in the Event of Shortage of Subscriptions. In the event available subscriptions are insufficient to meet Category (b) requests, available subscriptions shall be allocated to each request in the proportion that

the particular request bears to the total requests of the particular category.

(6) Additional Voluntary Subscriptions.

If subscriptions available to meet the requests of Exchangees are insufficient to meet all requests, additional voluntary subscriptions may be solicited and received from parties by the Water Rights Panel. Such additional subscriptions shall be allocated first to Category (a) requests to the extent unfilled, and next to Category (b) requests to the extent unfilled. All allocations are to be otherwise in the same manner as earlier provided in paragraph 5 (a) through 5 (e) inclusive.

(7) Effect if Category (a) Requests Exceed Available Subscriptions, Both Required and Voluntary.

In the event that the quantity of subscriptions available to fill Category (a) requests is less than the total quantity of such requests, the Exchangees may, nonetheless, extract the full amount of their Category (a) requests otherwise approved by the Water Rights Panel as if sufficient subscriptions were available. The amounts received by the Water Rights Panel on account of that portion of the approved requests in excess of the total quantities available from Exchangors shall be paid by the Water Rights Panel to WRD in trust for the purpose of purchasing imported water and spreading the same in Central Basin for replenishment thereof. Thereafter WRD may, at any time, withdraw said funds or any part thereof so credited in trust for the aforesaid purpose, or may by the 40th day of any Administrative Year utilize all or any portion of said funds for the purchase of water available from subscriptions by Exchangors in the event the total quantity of such subscriptions exceeds the total quantity of approved requests by parties to purchase Exchange Pool water. To the extent that there is such an excess of available subscriptions over requests and to the extent that the existing credit in favor of WRD is sufficient to purchase such excess quantity at

the price established for Exchange Pool purchases during that Administrative Year, the money shall be paid to the Exchangors in the same manner as if another party had made such purchase as an Exchangee. WRD shall not extract any such Exchange Pool water so purchased.

(8) Additional Pumping by Exchangees Pursuant to Exchange Pool Provisions.

An Exchangee may extract from Central Basin in addition to its Allowed Pumping Allocation for a particular Administrative Year that quantity of water which it has requested to purchase from the Exchange Pool during that Administrative Year and which has been allocated to it pursuant to the provisions of paragraphs 5, 6 and 7. The first pumping by an Exchangee in any Administrative Year shall be deemed to be pumping of the party's allocation of Exchange Pool water.

(9) Reduction in Pumping by Exchangors.

Each Exchangor shall in each Administrative Year reduce its extractions of water from Central Basin below its Allowed Pumping Allocation for the particular year in a quantity equal to the quantity of Exchange Pool requests allocated to it pursuant to the provisions of paragraphs 4, 5, 6 and 7 of this Subpart C.

(10) Price to be Paid for Exchange Pool Water.

The price to be paid by Exchangees and to be paid to Exchangors per acre foot for required and voluntary subscriptions of Exchangors utilized to fill requests on the Exchange Pool by Exchangees shall be the dollar amount computed as follows by the Water Rights Panel for each Administrative Year. The "normal" price as of the beginning of the Administrative Year charged by Central Basin Municipal Water District (CBMWD) for treated MWD (Metropolitan Water District of Southern California) water used for domestic and municipal purposes shall be determined, and if on that date there are any changes

scheduled during that Administrative Year in CBMWD's "normal" price for such category of water, the weighted daily "normal" CBMWD price shall be determined and used in lieu of the beginning such price; and there shall be deducted from such beginning or weighted price, as the case may be, the "incremental cost of pumping water in Central Basin" at the beginning of the Administrative Year and any then current rate or rates, of assessments levied on the pumping of groundwater in Central Basin by Plaintiff District and any other governmental agency. The "normal" price charged by CBMWD shall be the highest price of CBMWD for normal service excluding any surcharge or higher rate for emergency deliveries or otherwise failing to comply with CBMWD rates and regulations relating to earlier deliveries. The "incremental cost of pumping water in Central Basin" as of the beginning of the Administrative Year shall be deemed to be the Southern California Edison Company Schedule No. PA-1 rate per kilowatt-hour, including all adjustments and all uniform authorized additions to the basic rate, multiplied by 560 kilowatt-hours per acre-foot, rounded to the nearest dollar (which number of kilowatt-hours has been determined to represent the average energy consumption to pump an acre-foot of water in Central Basin). In applying said PA-1 rate the charge per kilowatt-hour under the schedule shall be employed and if there are any rate blocks then the last rate block shall be employed. Should a change occur in Edison schedule designations, the Water Rights Panel shall employ that applicable to motors used for pumping water by municipal utilities.

(11) Carry-over of Exchange Pool Purchases by Exchangees.

An Exchangee who does not extract from Central Basin in a particular Administrative Year a quantity of water equal to the total of (a) its Allowed Pumping Allocation for that particular Administrative Year, reduced by any authorized amount of carryover into the next succeeding Administrative Year pursuant to the provisions of Section III(A) of this Judgment, and (b) the quantity

that it purchased from the Exchange Pool for that particular Administrative Year, may carry over into the next succeeding Administrative Year the right to extract from Central Basin a quantity equal to the difference between said total and the quantity actually extracted in that Administrative Year, but not exceeding the quantity purchased from the Exchange Pool for that Administrative Year. Any such carryover shall be in addition to that provided in said Section III(A).

If the "Basinwide Average Exchange Pool Price" in the next succeeding Administrative Year exceeds the "Exchange Pool Price" in the previous Administrative Year any such Exchangee exercising such carryover rights hereinabove provided shall pay to the Watermaster, forthwith upon the determination of the "Exchange Pool Price" in said succeeding Administrative Year, and as a condition to such carryover rights, an additional amount determined by multiplying the number of acre feet of carryover by the difference in "Exchange Pool Price" as between the two Administrative Years. Such additional payment shall be miscellaneous income to the Watermaster which shall be applied by it against that share of the Watermaster's Administrative Body's budget to be paid by the parties to this Agreement for the second Administrative Year succeeding that in which the Exchange Pool water was so purchased. For purposes of this paragraph, the term Basinwide Average Exchange Pool Price means the average price per acre foot paid for Exchange Pool water produced within the Central Basin during the year for which such determination is to be made, taking into account all Exchange Pool transactions consummated during that year.

(12) Notification by Watermaster to Exchangors and Exchangees of Exchange Pool Requests and Allocations Thereof and Price of Exchange Pool Water.

Not later than the 65th day after the commencement of each Administrative Year, the Administrative Body of Watermaster shall determine

and notify all Exchangors and Exchangees of the total of the allocated requests for Exchange Pool water and shall provide a schedule divided into categories of requests showing the quantity allocated to each Exchangee and a schedule of the allocation of the total Exchange Pool requirements among the Exchangors. Such notification shall also advise Exchangors and Exchangees of the prices to be paid to Exchangors for subscriptions utilized and the Exchange Pool Price for that Administrative Year as determined by the Water Rights Panel. The determinations of the Watermaster in this regard shall be subject to review by the Court in accordance with the procedure set forth in Part II of this Judgment.

(13) Payment by Exchangees.

Each Exchangee shall, on or prior to last day of the third month of each Administrative Year, pay to the Watermaster one-quarter of said price per acre-foot multiplied by the number of acre feet of such party's approved request and shall, on or before the last day of each of the next succeeding three months, pay a like sum to the Watermaster. Such amounts must be paid by each Exchangee regardless of whether or not it in fact extracts or uses any of the water it has requested to purchase from the Exchange Pool.

(14) Payments to Exchangors.

As soon as possible after receipt of moneys from Exchangees, the Watermaster shall remit to the Exchangors their pro rata portions of the amount so received in accordance with the provisions of paragraph 10 above.

(15) Delinquent Payments.

Any amounts not paid on or prior to any due date above shall carry interest at the rate of 1% per month or any part of a month. Any amounts required to be so paid may be enforced by the equitable powers of the Court, including, but not limited to, the injunctive process of the Court. In addition thereto, the Watermaster, as Trustee for the Exchangors and acting through the Water Rights Panel, may enforce such payment by any appropriate legal action, and shall be

entitled to recover as additional damages reasonable attorneys' fees incurred in connection therewith. If any Exchangee shall fail to make any payments required of it on or before 30 days after the last payment is due, including any accrued interest, said party shall thenceforward not be entitled to purchase water from the Exchange Pool in any succeeding Administrative Year except upon order of the Court, upon such conditions as the Court may impose.

IV. PROVISIONS FOR THE STORAGE OF WATER AND THE EXTRACTION OF STORED WATER.

A. Adjudication of Available Dewatered Space, Storage Capacity and Storage Apportionment.

There exists within the Basin a substantial amount of available space which has not been optimally utilized for basin management and for storage of native and imported waters. The Court finds and determines that (i) there is 330,000 acre feet of Available Dewatered Space in the Basin; (ii) use of this Available Dewatered Space will increase reasonable and beneficial use of the Basin by permitting the more efficient procurement and management of Replenishment Water, conjunctive use, and for direct and in-lieu recharge, thereby increasing the prudent storage and recovery of Stored Water for later use by parties to this Judgment, conservation of water and reliability of the water supply available to all Parties; and (iii) use of the Available Dewatered Space pursuant to the terms and conditions of this Judgment will not result in Material Physical Harm.

B. Avoidance of Material Physical Harm.

It is essential that the use of the Available Dewatered Space be undertaken for the greatest public benefit pursuant to uniform, certain, and transparent regulation that encourages the conservation of water and reliability of the water supply, avoids Material Physical Harm, and promotes the reasonable and beneficial use of water. Accordingly, in the event Watermaster becomes aware of the development of a Material Physical Harm, or imminent threat of the development of a Material Physical Harm, relating to the

use of the Available Dewatered Space, Watermaster shall, within thirty (30) days thereafter, notice a hearing before the Court and concurrently file a report with the Court, served on all parties, which shall explain the relevant facts then known to Watermaster relating to the Material Physical Harm, or imminent threat thereof, including without limitation, the location of the occurrence, the source or cause, existing and potential physical impacts or consequences of the identified or threatened material Physical Harm, and any recommendations to remediate the identified or threatened Material Physical Harm.

C. Apportionment of Available Dewatered Space.

To fairly balance the needs of the divergent interests of parties having water rights in the Basin, on the one hand, and the replenishment functions of WRD on the other hand, and in consideration of the shared desire and public purpose of removing impediments to the voluntary conservation, storage, exchange and transfer of water, all of the Available Dewatered Space is hereby adjudicated and apportioned into complimentary classifications of Stored Water and a Basin Operating Reserve as set forth in this Part IV. The apportionment contemplates flexible administration of storage capacity where use is apportioned among competing needs, while allowing all Available Dewatered Space to be used from time to time on a "space available" basis, subject to the priorities specified in this Judgment, and as further defined in Section IV(I) of this Judgment. The Court further finds and determines that, of the Available Dewatered Space, there is 220,000 acre-feet of storage capacity in the Central Basin which is presently available ("Adjudicated Storage Capacity"). The use of Adjudicated Storage Capacity as provided in this Judgment will not adversely affect the efficient operation of the Basin or the recharge of water necessary for the production of the parties' respective Allowed Pumping Allocations. The apportionment of Adjudicated Storage Capacity as provided herein will allow for flexible administration of groundwater storage within the Basin. The Adjudicated Storage Capacity is hereby assigned to Individual Storage Allocations and Community Storage as provided herein, provided however that if all

space in a particular classification is fully occupied then, on a "space available" basis, to available space within the other classifications of Adjudicated Storage Capacity and, only then, to available space within Basin Operating Reserve.

The Court further finds and determines that, out of the Available Dewatered Space, there is 110,000 acre feet that should be set aside for use by WRD as a Basin Operating Reserve, provided in Section IV(L), and subject to temporary occupancy by Stored Water as permitted hereunder.

No storage of water shall occur in the Basin except in conformity with this Judgment.

D. Individual Storage Allocation.

Each Party having an adjudicated groundwater extraction right hereunder shall have a priority right to store water in an Individual Storage Account, through conversion of Carryover to Stored Water as provided herein, or by any means authorized by this Judgment, up to a maximum of 50% of such party's Allowed Pumping Allocation. The cumulative quantity of Adjudicated Storage Capacity subject to individual storage allocation is 108,750 acre-feet. In recognition of prior importation of water which was introduced into the Basin as Stored Water, and which has not yet been extracted, the Court finds and determines that, as of the date of this Order, the following Parties have occupied a portion of their respective Individual Storage Allocations and have all associated rights therein, as follows:

City of Long Beach:	13,076.8 acre-feet
City of Lakewood:	500 acre-feet
City of Downey:	500 acre-feet
City of Cerritos	500 acre-feet

E. Community Storage; Regional Disadvantaged Communities Incentive Program.

In addition to Individual Storage Allocation, a Party that has fully occupied its Individual Storage allocation may, on a first in time, first in right basis (subject to the

limits expressed below) place water into storage in the "Community Storage Pool." The cumulative quantity of Adjudicated Storage Capacity allocated to Community Storage shall be 111,250 acre-feet. So long as there is available capacity in the Community Storage Pool, any Party may store water in the Community Storage Pool through conversion of Carryover to Stored Water as provided herein, or by any other means authorized by this Judgment, provided such Party has first fully occupied that party's available Individual Storage Allocation.

(1) Parties to this Judgment which, as of January 1, 2013, held Allowed Pumping Allocation of not greater than 5,000 acre-feet shall have a first priority right to occupy, in the aggregate, up to 10,000 acre-feet of storage space within the Central Basin Community Storage Pool, on the basis of first in time, first in right.

(2) Water stored pursuant to the Regional Disadvantaged Communities Incentive Program shall have a second priority right to occupy up to 23,000 acre-feet within the Community Storage Pool, on such terms as shall be determined by the Court.

(3) Any further storage in excess of the maximum quantity of Community Storage will be on a "space-available" interim basis. From time to time, and on a "space-available" basis, the total quantity of water available for storage is permitted to exceed Adjudicated Storage Capacity for the Community Storage Pool on an interim basis. This interim storage may occur if storage capacity exists as a result of unused Adjudicated Storage Capacity within other classifications, or available space exists in the Basin Operating Reserve. Such interim storage, however, is subject to priority rights to such Dewatered Space as provided in this Judgment. A party that seeks to convert the water temporarily held in interim storage to a more firm right, may contract for the use of another party's Individual Storage Allocation, or may add such water to the Community Storage Pool once space therein becomes available.

(4) After a party occupies available storage capacity within the Community Storage Pool and then withdraws water from the Community Storage Pool, the storing party will be allowed a period of twenty-four (24) months to refill the evacuated storage before the capacity will be determined excess and available for use by other parties. Once the Basin's Community Storage Pool has been filled for the first time, a party may exercise its twenty-four (24) month refill priority only once, and then only provided there is then capacity available to permit that party to refill the vacated space. Except to the extent Community Storage space may be subject to such priority right to re-fill, all space therein shall be occupied on a first in time, first in right basis.

(5) A party that has occupied storage in the Community Storage Pool for ten (10) consecutive years shall be deemed to extract its Stored Water first in subsequent years (notwithstanding the order of water production set forth in Section I(B)(3)) until its entire Community Storage account has been extracted, but thereafter may again make use of Community Storage on the same terms available to other parties on a first in time, first in right, space-available basis.

(6) Any quantity of water held in the Community Storage Pool for a term greater than ten (10) consecutive years shall be assessed an annual water loss equal to 5% of the lowest quantity of water held within the party's Community Storage Pool account at any time during the immediately preceding ten-year period. The lowest quantity means the smallest amount of water held by the Party in the Community Storage Pool during any of the preceding ten (10) years, with a new loss calculation being undertaken every year. Water subject to the loss assessment will be deemed dedicated to the Basin Operating Reserve in furtherance of the physical solution without compensation. Water lost to the Basin shall constitute water replenished into the Central Basin for the benefit of all parties

F. Limit on Storage.

Irrespective of the category of storage utilized, each party to this Judgment may not cumulatively have in storage at any time Stored Water totaling more than two hundred percent (200%) of that party's Allowed Pumping Allocation. Subject to the foregoing, the right to produce Stored Water may be freely transferred to another party to this Judgment, or as otherwise permitted herein.

G. Extractions of Stored Water; Exemption from Replenishment Assessment.

The Court finds and declares that the extraction of Stored Water as permitted hereunder does not constitute "production of groundwater" within the meaning of Water Code Section 60317 and that no Replenishment Assessment shall be levied on the extraction of Stored Water. WRD has stipulated to the same. This determination reflects the practical application of certain provisions of this Judgment concerning storage of water, including, without limitation, understanding the following: (1) payment of the Replenishment Assessment is required upon the conversion of Carryover Water into storage, and; (2) developed water introduced into the Basin for storage by or on behalf of a Party through spreading or injection need not be replenished by WRD and should not be subject to the Replenishment Assessment.

H. Storage Procedure.

The Administrative Body shall (i) prescribe forms and procedures for the orderly reporting of Stored Water, (ii) maintain records of all water stored in the Basin, and (iii) undertake monitoring and modeling of Stored Water as may be reasonably required. As to any Storage Projects that will require review and approval by the Storage Panel, the Administrative Body shall provide appropriate applications, and shall work with project applicants to complete the application documents for presentation to the Storage Panel. The Administrative Body shall be responsible for conducting any groundwater modeling necessary to evaluate a proposed Storage Project. The proponent of a proposed project will bear all costs associated with the review of the application for approval of the project and all costs associated with its implementation. Nothing in this Judgment shall alter the applicant(s) duty to comply with CEQA or to meet other legal requirements as to any

proposed Storage Project. Within thirty (30) days after final submission of the storage application documents, the Administrative Body shall provide notice of the storage application (either by electronic mail or U.S. postal mail), together with a copy of the application documents, to all parties possessing an Allowed Pumping Allocation, and to any other person requesting notice thereof. Following notice, any necessary hearings before the Storage Panel shall be conducted as provided in Section IV(O) of this Judgment.

I. Loss of Stored Water/Relative Priority.

To balance the need to protect priority uses of storage and to encourage the full utilization of Adjudicated Storage Capacity and Basin Operating Reserve where it can be accommodated without interference with priority uses, and except as otherwise provided in this Judgment, no water held in any authorized storage account will be deemed lost from that storage account unless the cumulative quantity of water held as Stored Water plus the quantity of water held within the Basin Operating Reserve exceeds 330,000 acre-feet. Where all Adjudicated Storage Capacity and Basin Operating Reserve has been occupied, the first Stored Water to be deemed lost shall be the last water stored as Community Storage. Upon receipt of a bona fide request by another use entitled to priority hereunder, Watermaster shall issue a notice requiring the other parties to evacuate their Stored Water. Any Stored Water that is not evacuated shall be deemed dedicated to the Basin Operating Reserve in furtherance of the physical solution without compensation and accounted for accordingly.

J. Limits on Extraction.

Anything in this Judgment to the contrary notwithstanding, no party shall extract greater than 140% of the sum of (i) the party's Allowed Pumping Allocation and (ii) the party's leased water, except upon prior approval by the Water Rights Panel. For this purpose, a party's total extraction right for a particular year shall include that party's Allowed Pumping Allocation and any contractual right through lease or other means to utilize the adjudicated rights of another party. Where such proposed extraction would

occur within the Central Basin Pressure Area as defined by Watermaster consistent with historical records, the Water Rights Panel shall submit such request for review by the Board of WRD. The Water Rights Panel shall not approve any request for over-extraction within the Pressure Area without a written finding by the Board of WRD that such over-extraction will not cause Material Physical Harm. The role of the Board of WRD in this process shall not be read to expand or restrict WRD's statutory authority. Consideration shall be on an expedited basis.

K. Increased Extractions in the Central Basin for Certain Water Purveyors.

(1) This Court also maintains continuing jurisdiction over the West Coast Basin, which bounds the Central Basin to the west.

(2) Certain Water Purveyors are parties to both this Amended Judgment and the judgment governing the West Coast Basin and serve communities overlying both the Central Basin and the West Coast Basin.

(3) Certain Water Purveyors may exceed their Allowed Pumping Allocation in any Administrative Year, subject to all of the following conditions:

(a) The Water Purveyor is one of the following eligible Parties:

(i) City of Los Angeles

(ii) Golden State Water Company

(iii) California Water Service Company.

(b) Increased extractions pursuant to this Section shall not exceed 5,000 acre-feet per Water Purveyor for the particular Administrative Year.

(c) Increased extractions pursuant to this Section shall not exceed the Water Purveyor's unused "Adjudicated Rights" in the West Coast Basin.

(d) Increased extractions pursuant to this Section shall not result in Material Physical Harm.

(4) Notwithstanding the foregoing, nothing herein permits extraction

of water within the Central Basin in excess of 140% of Allowed Pumping Allocation for the particular Administrative Year, except as otherwise permitted under this Judgment.

(5) Replenishment of any water extracted from the Central Basin pursuant to this Section shall occur exclusively in the Central Basin.

(6) The benefits of this Section are made available only to the certain Water Purveyors that serve communities overlying the Central Basin and communities overlying the West Basin, in recognition of the management of water resources by those Water Purveyors to serve such overlying communities. It is not made, nor is it related to, a determination of an underflow between the basins, a cost or benefit allocation, or any other factor relating to the allocation of the Replenishment Assessment.

L. Special Provisions for Temporary Storage within Community Storage Pool.

The Central Basin Municipal Water District ("CBMWD") shall take such action as may be necessary to reduce its Allowed Pumping Allocation to five (5) acre-feet or fewer by December 31, 2018, and has agreed, by stipulation, not to acquire any additional Central Basin water rights. Upon application by CBMWD, the Storage Panel may, after making each of the findings required in this subsection, approve storage of water by CBMWD within the Community Storage Pool subject to the stated conditions. The Storage Panel may only authorize such storage after finding each of the following to be true as of the date of such approval:

(1) CBMWD (a) then owns five (5) acre-feet or fewer of Allowed Pumping Allocation, and (b) has not produced water utilizing any extraction rights it holds within the Basin but has only engaged in the sale or leasing of those rights to others.

(2) There is available space for Storage within the Community Storage

Pool.

(3) CBMWD has identified a source of imported water that may be brought into the Basin and stored underground.

(4) The water identified for storage (a) is unlikely to be acquired by other parties through surface delivery for use within the Basin, and (b) was offered to WRD to purchase for replenishment purposes at the same price that CBMWD otherwise sells imported water to WRD and WRD declined to purchase said water, within a reasonable period of time.

(5) There will be no Material Physical Harm associated with the introduction of the water into storage, or its extraction, in the manner approved by the Storage Panel.

The condition expressed in Section IV(L)(1)(a) above shall not be operative until January 1, 2019, or upon reduction of CBMWD's Allowed Pumping Allocation to five (5) acre-feet or fewer, whichever first occurs. CBMWD may not extract the Stored Water, and may instead only transfer that Stored Water to a party having extraction rights, or to WRD for replenishment purposes only. Such Stored Water not so transferred within three (3) years following its storage may be purchased by WRD, at its option, for replenishment purposes only, at a price not exceeding the actual cost incurred by CBMWD in importing and storing the water in the first instance, plus a reasonable administrative charge for overhead not exceeding five percent (5%) of the price paid by CBMWD for the water with no other fees or markups imposed by CBMWD. Except as otherwise permitted in this Section, any such Stored Water held by CBMWD for a term greater than three (3) years shall be assessed an annual water loss equal to 10% of the amount of such Stored Water at the end of each year. Water subject to the loss

assessment will be deemed dedicated to the Basin Operating Reserve in furtherance of the physical solution without further compensation. The Storage Panel shall grant CBMWD one or more extensions of such term, not exceeding total extensions of three (3) additional years, following public hearing, if the Storage Panel determines that the Stored Water has been actively marketed by CBMWD for transfer to Parties on reasonable terms in the previous year. The Storage Panel may impose such additional reasonable conditions as it determines to be appropriate. Any review by the Storage Panel hereunder shall only occur at a public hearing held following at least 15 days' (but not more than 30 days') mailed notice to all Parties to this Judgment, at which hearing an opportunity for public comment shall be afforded in advance of any such decision. However, the Storage Panel may consider an application on shorter notice under exigent circumstances, including the potential loss of the water proposed to be stored if action is not taken sooner. CBMWD shall have the right to appeal any action or inaction by the Storage Panel to this court. The storage and extraction of Stored Water hereunder shall otherwise be subject to all other provisions of this Judgment. The court finds and declares that this subsection constitutes a "court order issued by a court having jurisdiction over the adjudication of groundwater extraction rights within the groundwater basin where storage is sought" within the meaning of Water Code §71610(b)(2)(B). Nothing in this provision impedes CBMWD's ability to store water pursuant to a contract with an adjudicated groundwater extraction rights holder as permitted by Water Code § 71610(b)(2)(A) and otherwise in accordance with this Judgment.

M. Basin Operating Reserve.

It is in the public interest and in furtherance of the physical solution for WRD to prudently exercise its statutory discretion to purchase, spread, and inject Replenishment Water, to provide for in-lieu replenishment, and otherwise to fulfill its replenishment function within the Basin as provided in Water Code Section 60000 et. seq. Hydrologic,

regulatory and economic conditions now prevailing within the State require that WRD be authorized to exercise reasonable discretion and have flexibility in the accomplishment of its replenishment function. Accordingly, WRD may pre-purchase or defer the purchase of Replenishment Water, and may otherwise purchase and manage available sources of Replenishment Water under the most favorable climatic and economic conditions as it may determine reasonable and prudent under the circumstances. It is the intent of the parties to preserve space for such replenishment activities, including capture of natural inflows during wet years, recapture of water when possible, and artificial replenishment when water is available at discounted rate, for the benefit of the Basin and the parties to the Judgment. The Basin Operating Reserve is intended to allow WRD to meet its replenishment needs to make APA available for extraction by all water rights holders. Accordingly, WRD shall have a priority right to occupy up to 110,000 acre-feet of the Available Dewatered Space as the "Basin Operating Reserve" for the acquisition and replenishment of water, or to ensure space remains available in the Basin to capture natural inflows during wet years for the benefit of the parties to the Judgment, to offset over-production. The priority right is not intended to allow WRD to sell or lease stored water, storage, or water rights. To the extent WRD does not require the use of all of such Basin Operating Reserve, that portion of the Basin Operating Reserve that is not then being used shall be available to other Parties to store water on a temporary and space-available basis. No Party may use any portion of the Basin Operating Reserve for space-available storage unless that Party has already maximized its allowed Storage pursuant to its Individual Storage Allocation and all available Community Storage is already in use. WRD's failure to use any portion of its Basin Operating Reserve shall not cause forfeiture or create a limitation of its right to make use of the designated space in the future. WRD's first priority right to this category of space shall be absolute. To the extent that there is a conflict between WRD and a third party regarding the availability of and desire to use any portion of the space available for replenishment up to the maximum limits set forth in this section, the interests of WRD will prevail. If a party other than

WRD is using the Basin Operating Reserve space on a "space available" basis and a conflict develops between WRD and the storing party, the storing party will, upon notice from WRD, evacuate the Stored Water within ninety (90) days thereafter. In such event, temporary occupancy within the Basin Operating Reserve shall be first in time, first in right, and the last Party to store water shall be required to evacuate first until adequate space shall be made available within the Basin Operating Reserve to meet WRD's needs. The storing party or parties assume all risks of waste, spill and loss regardless of the hardship. Stored Water that is not evacuated following WRD's notice of intent to occupy the Basin Operating Reserve will be deemed dedicated to the Basin Operating Reserve in furtherance of the physical solution without compensation and accounted for accordingly. Nothing herein shall permit WRD to limit or encumber, by contract or otherwise, its right to use the Basin Operating Reserve for Replenishment purposes for any reason, or to make space therein available to any person by any means. Notwithstanding the foregoing, to the extent excess space is available, water evacuated from the Basin Operating Reserve as provided in this Section shall be deemed added to available space within the Individual Storage Allocations and Community Storage Pool, subject to the priority rights otherwise provided in this Judgment.

N. Water Augmentation.

The parties, in coordination with WRD, may undertake projects that add to the long-term reliable yield of the Basin. Innovations and improvements in practices that increase the conservation and maximization of the reasonable and beneficial use of water should be promoted. To the extent that Parties to the Judgment, in coordination with WRD, implement a project that provides additional long-term reliable water supply to the Central Basin, the annual extraction rights in the Central Basin will be increased commensurately in an amount to be determined by the Storage Panel to reflect the actual yield enhancement associated with the project. Augmented supplies of water resulting from such a project may be extracted or stored as permitted in this Judgment in the same manner as other water. Participation in any Water Rights Augmentation Project shall be

voluntary. A party may elect to treat a proposed project as a Water Augmentation Project (for the purpose of seeking an increase in that party's Allowed Pumping Allocation) or may elect to treat such a project as a Storage Project under the other provisions of this Judgment. The terms of participation in any Water Augmentation Project will be at the full discretion of the participating parties. All Water Augmentation Projects will be approved by the Storage Panel.

(1) Participating Parties.

Parties who propose a Water Augmentation Project ("Project Leads") may do so in their absolute discretion, upon such terms as they may determine. All other parties to this Judgment will be offered an opportunity to participate in the Water Augmentation Project on condition that they share proportionally in common costs and benefits, and assume the obligation to bear exclusively the cost of any improvements that are required to accommodate their individual or particular needs. Notice shall be provided which generally describes the project and the opportunity to participate with sufficient time for deliberation and action by any of these parties who could potentially participate. Disputes over the adequacy of notice shall be referred to the Storage Panel, and then to the Court under its continuing jurisdiction. Parties who elect to participate ("Project Participants") may do so provided they agree to offer customary written and legally binding assurances that they will bear their proportionate costs attributable to the Water Rights Augmentation Project, or provide other valuable consideration deemed sufficient by the Project Leads and the Project Participants.

(2) Determination of Additional Extraction Rights.

The amount of additional groundwater extraction as a result of a Water Augmentation project will be determined by the Storage Panel, subject to review by the Court. The determination will be based upon substantial evidence which supports the finding that the Water Augmentation project will increase the long-term sustainable yield of the respective Basin by an amount at least equal to the

proposed increase in extraction rights.

(3) Increase in Extraction Rights.

A party that elects to participate and pays that party's full pro-rata share of costs associated with any Water Augmentation Project and/or reaches an agreement with other participants based upon other valuable consideration acceptable to the Project Leads and Project Participants, will receive a commensurate increase in extraction rights. Non-participating parties will not receive an increase or a decrease in extraction rights. Any party that elects not to participate will not be required to pay any of the costs attributable to the particular Water Augmentation Project, whether directly or indirectly as a component of the WRD Replenishment Assessment.

(4) Nominal Fluctuations.

Because water made available for Water Rights Augmentation will be produced annually, fluctuations in groundwater levels will be temporary, nominal and managed within the Basin Operating Reserve.

(5) Availability of New Water.

The amount of additional groundwater extraction established as a result of a Water Augmentation Project shall be equal to the quantity of new water in the Basin that is attributable to that Water Augmentation Project. No extraction shall occur and no extraction right shall be established until new water has been actually introduced into the Basin as a result of the Project. Any approval for a Water Augmentation Project shall include provisions (a) requiring regular monitoring to determine the actual amount of such new water made available, (b) requiring make-up water or equivalent payment therefor to the extent that actual water supply augmentation does not meet projections, and (c) adjusting extraction rights attributable to the Water Augmentation Project to match the actual water created. The right to extract augmented water from the Basin resulting from a party's participation in a Water Augmentation Project shall be accounted for

separately and shall not be added to a party's Allowed Pumping Allocation. No Replenishment Assessment shall be levied against the extraction of augmented water.

(6) Limitation.

Notwithstanding the foregoing, WRD will not obtain any water rights or extraction rights under this Judgment by virtue of its participation in a Water Augmentation Project. If WRD participates in a Water Rights Augmentation Project through funding or other investments, its allocation of new water from the project shall be used to offset its replenishment responsibilities.

O. Limits on Watermaster Review.

It shall not be necessary for Watermaster, or any constituent body thereof, to review or approve any of the following before the affected Party may proceed: (i) exercise of adjudicated water rights consistent with this Judgment, except for extraction above 140% of a Party's extraction right as set out in Section IV(J) of this Judgment; (ii) replenishment of the Basin with Replenishment Water by WRD consistent with Water Code Section 60000 et seq., including replenishment of water produced by water rights holders through the exercise of adjudicated water rights; (iii) WRD's operations within the Basin Operating Reserve; (iv) Carryover Conversion or other means of the filling of the Individual Storage Accounts and the Community Storage Pool, as provided in this Judgment, as long as existing water production, spreading, or injection facilities are used; and (v) individual transfers of the right to produce Stored Water as permitted in Section IV(F). All other Storage Projects and all Water Augmentation Projects shall be subject to review and approval as provided herein, including (i) material variances to substantive criteria governing projects exempt from the review and approval process, (ii) modifications to previously approved Storage Projects and agreements, (iii) a party's proposal for Carryover Conversion in quantities greater than the express apportionment of Adjudicated Storage Capacity on a non-priority, space-available, interim basis, and (iv) Storage, by means other than Carryover Conversion, when new production,

spreading, or injection facilities are proposed to be utilized.

P. Hearing Process For Watermaster Review.

The following procedures shall be followed by Watermaster where Watermaster review of storage or extraction of Stored Water is required or permitted under this Judgment:

(1) No later than thirty (30) days after notice has been issued for the storage application, the matter shall be set for hearings before the Storage Panel. A staff report shall be submitted by WRD staff in conjunction with the completed storage application documents and the Water Rights Panel may prepare an independent staff report, if it elects to do so.

(2) The Board of WRD and the Water Rights Panel (sitting jointly as the Storage Panel) shall conduct a joint hearing concerning the storage application.

(3) All Watermaster meetings shall be conducted in the manner prescribed by the applicable Rules and Regulations. The Rules shall provide that all meetings of Watermaster shall be open to water rights holders and that reasonable notice shall be given of all meetings.

(4) The Board of WRD and the Water Rights Panel shall each adopt written findings explaining its decision on the proposed Storage Project, although if both entities reach the same decision on the Storage Project, they shall work together to adopt a uniform set of findings.

(5) Unless both the Board of WRD and the Water Rights Panel approve the Storage Project, the Storage Project application shall be deemed denied (a "Project Denial"). If both the Board of WRD and the Water Rights Panel approve the Storage Project, the Storage Project shall be deemed approved (a "Project Approval").

Q. Trial Court Review

(1) The applicant may seek the Storage Panel's reconsideration of a

Project Denial. However, there shall be no process for mandatory reconsideration or mediation of a Project Approval or a Project Denial either before the Administrative Body, or before the Water Rights Panel.

(2) Any Party may file an appeal from a Project Approval or Project Denial with this Court, as further described in Section II(F).

(3) In order to (a) promote the full presentation of all relevant evidence before the Storage Panel in connection with its consideration of any proposed Storage Project, (b) achieve an expeditious resolution of any appeal to the Court, and (c) accord the appropriate amount of deference to the expertise of the Storage Panel, the appeal before the Court shall be based solely on the administrative record, subject only to the limited exception in California Code of Civil Procedure section 1094.5(e).

(4) If both the WRD Board and the Water Rights Panel each vote to deny or approve a proposed Storage Project, it shall be an action by the Storage Panel and that decision shall be accorded by the Court deference according to the substantial evidence test. If one of the reviewing bodies votes to approve the proposed Storage Project and the other reviewing body votes to deny the proposed storage project, then the Court's review shall be *de novo*, although still restricted to the administrative record. In the case of any *de novo* Trial Court review, the findings made by the respective Watermaster bodies shall not be accorded any weight independent of the evidence supporting them.

R. Space Available Storage, Relative Priority, and Dedication of "Spilled" Water.

To balance the need to protect priority uses of storage and to encourage the full utilization of Available Dewatered Space within the Adjudicated Storage Capacity and the Basin Operating Reserve, any Party may make interim, temporary use of then currently unused Available Dewatered Space within any category of Adjudicated Storage Capacity, and then if all Adjudicated Storage Capacity is being fully used for Stored

Water within the Basin Operating Reserve ("Space-Available Storage"), subject to the following criteria:

(1) Any Party may engage in Space-Available Storage without prior approval from Watermaster provided that the storing Party or Parties shall assume all risks of waste, spill, and loss regardless of the hardship. Whenever the Storage Panel determines that a Party is making use of excess Available Dewatered Space for Space-Available Storage, the Storage Panel shall issue written notice to the Party informing them of the risk of spill and loss.

(2) Whenever the Available Dewatered Space is needed to accommodate the priority use within a respective category of Adjudicated Storage Capacity, or WRD seeks to make use of its priority right to the Basin Operating Reserve to fulfill its replenishment function, the Storage Panel shall issue a notice to evacuate the respective category of Adjudicated Storage Capacity or Basin Operating Reserve, as applicable, within the time-periods set forth within this Amended Judgment. To the extent the Stored Water is not timely evacuated such Stored Water will be placed into any other excess Available Dewatered Space, first within the Adjudicated Storage Capacity, if available, and then if all Adjudicated Storage Capacity is being fully used for Stored Water within the Basin Operating Reserve. If no excess Available Dewatered Space is available within the Basin Operating Reserve, then the Stored Water shall be deemed spilled and will be deemed dedicated to the Basin Operating Reserve in furtherance of the physical solution without compensation and accounted for accordingly. A Party that seeks to convert the Stored Water temporarily held in interim storage as Space-Available Storage to a more firm right, may in its discretion, contract for the use of another Party's Individual Storage Allocation, or may add such water to the Community Storage Pool once space therein becomes available.

(3) No Stored Water will be deemed abandoned unless the cumulative

quantity of water held as Stored Water plus the quantity of water held in the Basin Operating Reserve exceeds 330,000 (three hundred and thirty thousand) acre-feet in the Central Basin.

V. CONTINUING JURISDICTION OF THE COURT.

The Court hereby reserves continuing jurisdiction and upon application of any interested party, or upon its own motion, may review and redetermine the following matters and any matters incident thereto:

A. Its determination of the permissible level of extractions from Central Basin in relation to achieving a balanced basin and an economic utilization of Central Basin for groundwater storage, taking into account any then anticipated artificial replenishment of Central Basin by governmental agencies for the purpose of alleviating what would otherwise be annual overdrafts upon Central Basin and all other relevant factors.

B. Whether in accordance with applicable law any party has lost all or any portion of his rights to extract groundwater from Central Basin and, if so, to ratably adjust the Allowed Pumping Allocations of the other parties and ratably thereto any remaining Allowed Pumping Allocation of such party.

C. To remove any Watermaster or constituent body appointed from time to time and appoint a new Watermaster; and to review and revise the duties, powers and responsibilities of the Watermaster or its constituent bodies and to make such other and further provisions and orders of the Court that may be necessary or desirable for the adequate administration and enforcement of the Judgment.

D. To revise the price to be paid by Exchangees and to Exchangors for Exchange Pool purchases and subscriptions.

E. In case of emergency or necessity, to permit extractions from Central Basin for such periods as the Court may determine: (i) ratably in excess of the Allowed Pumping Allocations of the parties; or (ii) on a non-ratable basis by certain parties if

either compensation or other equitable adjustment for the benefit of the other parties is provided. Such overextractions may be permitted not only for emergency and necessity arising within Central Basin area, but to assist the remainder of the areas within The Metropolitan Water District of Southern California in the event of temporary shortage or threatened temporary shortage of its imported water supply, or temporary inability to deliver the same throughout its area, but only if the court is reasonably satisfied that no party will be irreparably damaged thereby. Increased energy cost for pumping shall not be deemed irreparable damage. Provided, however, that the provisions of this subparagraph will apply only if the temporary shortage, threatened temporary shortage, or temporary inability to deliver was either not reasonably avoidable by the Metropolitan Water District, or if reasonably avoidable, good reason existed for not taking the steps necessary to avoid it.

F. To review actions of the Watermaster.

G. To assist the remainder of the areas within The Metropolitan Water District of Southern California within the parameter set forth in subparagraph (e) above.

H. To provide for such other matters as are not contemplated by the Judgment and which might occur in the future, and which if not provided for would defeat any or all of the purposes of this Judgment to assure a balanced Central Basin subject to the requirements of Central Basin Area for water required for its needs, growth and development.

The exercise of such continuing jurisdiction shall be after 30 days' notice to the parties, with the exception of the exercise of such continuing jurisdiction in relation to subparagraphs E and G above, which may be *ex parte,* in which event the matter shall be forthwith reviewed either upon the Court's own motion or the motion of any party upon which 30 days' notice shall be so given. Within ten (10) days of obtaining any *ex parte* order, the party so obtaining the same shall mail notice thereof to the other parties. If any other party desires Court review thereof, the party obtaining the *ex parte* order shall bear the reasonable expenses of mailing notice of the proceedings, or may in lieu thereof undertake the mailing. Any contrary or

modified decision upon such review shall not prejudice any party who relied on said *ex parte* order.

VI. GENERAL PROVISIONS.

A. Judgment Constitutes Inter Se Adjudication.

This Judgment constitutes an inter se adjudication of the respective rights of all parties, except as may be otherwise specifically indicated in the listing of the water rights of the parties of this Judgment, or in Appendix "2" hereof. All parties to this Judgment retain all rights not specifically determined herein, including any right, by common law or otherwise, to seek compensation for damages arising out of any act or omission of any person. This Judgment constitutes a "court order" within the meaning of Water Code Section 71610(B)(2)(b).

B. Assignment, Transfer, Etc., of Rights.

Subject to the other provision of this Judgment, and any rules and regulations of the Watermaster requiring reports relative thereto, nothing herein contained shall be deemed to prevent any party hereto from assigning, transferring, licensing or leasing all or any portion of such water rights as it may have with the same force and effect as would otherwise be permissible under applicable rules of law as exist from time to time.

C. Service Upon and Delivery to Parties of Various Papers.

Service of the Judgment on those parties who have executed that certain Stipulation and Agreement for Judgment or who have filed a notice of election to be bound by the Exchange Pool provisions shall be made by first class mail, postage prepaid, addressed to the designee and at the address designated for that purpose in the executed and filed Counterpart of the Stipulation and Agreement for Judgment or in the executed and filed "Notice of Election to be Bound by Exchange Pool Provisions," as the case may be, or in any substitute designation filed with the Court.

Each party who has not heretofore made such a designation shall, within 30 days after the Judgment shall have been served upon that party, file with the Court, with proof

of service of a copy upon the Watermaster, a written designation of the person to whom and the address at which all future notices, determinations, requests, demands, objections, reports and other papers and processes to be served upon that party or delivered to that party are to be so served or delivered.

A later substitute designation filed and served in the same manner by any party shall be effective from the date of filing as to the then future notices, determinations, requests, demands, objections, reports and other papers and processes to be served upon or delivered to that party.

Delivery to or service upon any party by the Watermaster, by any other party, or by the Court, or any item required to be served upon or delivered to a party under or pursuant to the Judgment may be by deposit in the mail, first class, postage prepaid, addressed to the designee and at the address in the latest designation filed by that party.

D. Judgment Does Not Affect Rights, Powers, Etc., of Plaintiff District.

Nothing herein constitutes a determination or adjudication which shall foreclose Plaintiff District from exercising such rights, powers, privileges and prerogatives as it may now have or may hereafter have by reason of provisions of law.

E. Continuation of Order under Interim Agreement.

The order of Court made pursuant to the "Stipulation and Interim Agreement and Petition for Order" shall remain in effect through the Administrative Year in which this Judgment shall become final (subject to the reserved jurisdiction of the Court).

F. Effect of Extractions by Exchangees; Reductions in Extractions.

With regard to Exchange Pool purchases, the first extractions by each Exchangee shall be deemed the extractions of the quantities of water which that party is entitled to extract pursuant to his allocation from the Exchange Pool for that Administrative Year. Each Exchangee shall be deemed to have pumped his Exchange Pool request so allocated for and on behalf of each Exchangor in proportion to each Exchangor's subscription to the Exchange Pool which is utilized to meet Exchange Pool requests. No Exchangor shall ever be deemed to have relinquished or lost any of its rights determined in this

Judgment by reason of allocated subscriptions to the Exchange Pool. Each Exchangee shall be responsible as between Exchangors and that Exchangee, for any tax or assessment upon the production of groundwater levied for replenishment purposes by WRD or by any other governmental agency with respect to water extracted by such Exchangee by reason of Exchange Pool allocations and purchases. No Exchangor or Exchangee shall acquire any additional rights, with respect to any party to this action, to extract waters from Central Basin pursuant to Water Code Section 1005.1 by reason of the obligations pursuant to and the operation of the Exchange Pool.

G. Judgment Binding on Successors, Etc.

This Judgment and all provisions thereof are applicable to and binding upon not only the parties to this action, but as well to their respective heirs, executors, administrators, successors, assigns, lessees, licensees and to the agents, employees and attorneys in fact of any such persons.

H. Costs.

No party shall recover its costs herein as against any other party.

I. Intervention of Successors in Interest and New Parties.

Any person who is not a party (including but not limited to successors or parties who are bound by this Judgment) and who proposes to produce water from the Basin, store water in the Basin, or exercise water rights of a predecessor may seek to become a party to this Judgment through a Stipulation in Intervention entered into with the Plaintiff. Plaintiff may execute said Stipulation on behalf of the other parties herein, but such Stipulation shall not preclude a party from opposing such intervention at the time of the court hearing thereon. Said Stipulation for Intervention must thereupon be filed with the Court, which will consider an order confirming said intervention following thirty (30) days' notice to the parties. Thereafter, if approved by the Court, such intervenor shall be a party bound by this Judgment and entitled to the rights and privileges accorded under the physical solution herein.

J. Effect of this Amended Judgment on Orders Filed Herein.

This Third Amended Judgment shall not abrogate such rights of additional carryover of unused water rights as may otherwise exist pursuant to orders herein filed June 2, 1977 and September 29, 1977.

THE CLERK WILL ENTER THIS THIRD AMENDED JUDGMENT FORTHWITH.

DATED: 12-23-13

ABRAHAM KHAN

Judge of the Superior Court

APPENDIX 1

Description of Central Basin Area

That certain area in the County of Los Angeles, State of California, situated within the following exterior boundaries:

1. Commencing at the southernmost corner of the basin at a point on the Los Angeles-Orange County boundary 2,000 feet, more or less, northeasterly of the intersection of the center line of Pacific Coast Highway with said County boundary;

2. Thence in a straight line along the trace of the Reservoir Hill Fault to a point about 650 feet north and about 700 feet east of the intersection of Anaheim Street and Ximeno Avenue;

3. Thence in a straight line along the trace of said Reservoir Hill Fault to a point on the center line of Pacific Coast Highway, 650 feet west of the intersection of the center lines of said Pacific Coast Highway and Lakewood Boulevard;

4. Thence westerly along the center line of said Pacific Coast Highway to a point 300 feet west of its intersection with the center line of Obispo Avenue;

5. Thence in a straight line to a point about 400 feet east of the intersection of the center lines of Walnut and Creston Avenues;

6. Thence in a straight line along the escarpment of the Cherry Hill Fault to a point about 750 feet west and about 730 feet south of the intersection of Wardlow Road and Long Beach Boulevard;

7. Thence in a straight line to a point about 100 feet north and about 100 feet west of the intersection of Bixby Road and Del Mar Avenue;

8. Thence in a straight line extending through a point in the center line of Del Amo Boulevard about 900 feet west of the center line of the Pacific

Electric Railway to a point in the center line of Alameda Street about 2, 900 feet north of Del Amo Boulevard, the latter distance measured along the center line of Alameda Street;

9. Thence in a straight line along the crest of the Dominguez Hills to a point about 1, 300 feet north and about 850 feet west of the intersection of the center lines of Central Avenue and Victoria Street;

10. Thence in a straight line along the escarpment of the Avalon-Compton Fault to a point about 700 feet west of the intersection of the center lines of Avalon Boulevard and Rosecrans Avenue;

11. Thence in a straight line to a point 400 feet north of the intersection of El Segundo Boulevard and Vermont Avenue and continuing in another straight line to a point 2, 400 feet south and 1, 000 feet east of the intersection of the center lines of Crenshaw and Century Boulevards, the latter point being the approximate southeasterly end of the escarpment of the Potrero Fault;

12. Thence in a straight line along the escarpment of the Potrero Fault and continuing to a point on Northridge Drive about 200 feet northeasterly of its intersection with Marvale Drive, measured along the center line of Northridge Drive;

13. Thence in a straight line to a point on the center line of Stocker Street 1, 800 feet, more or less, northeasterly of the intersection of the center lines of Stocker Street and La Brea Avenue, measured along the center line of Stocker Street;

14. Thence easterly along said last mentioned center line and continuing along said center line, following the same in all its various courses and curves to its first intersection with the boundary line of said City of Los Angeles, being a boundary line in that certain annexation to the City of Los Angeles on April 22, 1948, designated Angeles Mesa Addition No. 5;

15. Thence southeasterly along said boundary line of the City of Los Angeles and continuing along the boundary line of said City of Los Angeles, following the same in all its various courses and curves, to an angle point in said boundary line of the City of Los Angeles being also an angle point in the boundary line of that certain territory annexed to the City of Los Angeles September 18, 1946 and known as Mesa Addition No. 3, said angle point being at the intersection of the southeasterly line of Stocker Avenue, 80 feet wide, as said Stocker Avenue is described in deed to the County of Los Angeles, recorded in Book 13445, page 197, of Official Records, in the office of said Recorder, with the westerly boundary line of that certain territory annexed to the City of Los Angeles July 27, 1922 and known as the Angeles Mesa Addition;

16. Thence northeasterly in a direct line to the intersection of the center line of Stocker Avenue, 80 feet wide, as shown on map of Tract No. 10023, recorded in Book 150, page 46, of Maps, in the office of said Recorder, with that certain center line of Crenshaw Boulevard, formerly Angeles Mesa Drive, 60 feet wide, shown on said map of Tract No. 10023 as the center line of Angeles Mesa Drive per book 6053, page 120, of Deeds;

17. Thence northerly along said certain center line of Crenshaw Boulevard, formerly Angeles Mesa Drive, 60 feet wide, to the southerly line of the northerly 30 feet of Santa Barbara Avenue, 75 feet wide, shown on said map of Tract No. 10023 as the line described in deed recorded in Book 347, page 35, of Official Records;

18. Thence easterly along said line shown on said map of Tract No. 10023 as the line described in deed recorded in Book 347, page 35, of Official Records, to the easterly terminus thereof as shown on said map;

19. Thence northerly in a direct line to the southwesterly corner of Lot 273, Tract No. 809, as shown on map recorded in Book 16, page 74, of Maps, in the office of said Recorder, said southwesterly corner of Lot 273 being a point on the northerly line of the north roadway, 30 feet wide, of Santa Barbara Avenue, as shown on said last mentioned map;

20. Thence easterly along said northerly line of the north roadway, 30 feet wide, of Santa Barbara Avenue, to the southeasterly corner of Lot 52 of said Tract No. 809;

21. Thence in a direct line to the southwesterly corner of Lot 280, Tract No. 4463, as shown on map recorded in Book 48, page 31, of Maps, in the office of said Recorder, said southwesterly corner of Lot 280 being a point in the northerly line of the north roadway of Santa Barbara Avenue as shown on said last mentioned map;

22. Thence easterly along said northerly line of the north roadway of Santa Barbara Avenue to the southeasterly corner of Lot 39 of said Tract No. 4463;

23. Thence continuing easterly along said northerly line of the north roadway of Santa Barbara Avenue to the westerly line of Western Avenue, 60 feet wide, as shown on said map of Tract No. 4463;

24. Thence easterly in a direct line to the intersection of the easterly line of Western Avenue, 60 feet wide, with the northerly line of the north roadway of Santa Barbara Avenue, as said intersection is shown on map of Tract No. 2583, recorded in Book 32, page 58, of Maps, in the office of said Recorder;

25. Thence easterly along said northerly line of the north roadway of Santa Barbara Avenue to its intersection with the westerly line of Denker Avenue, 60 feet wide, as shown on said map of Tract No. 2583;

26. Thence easterly in a direct line to the southwesterly corner of Lot 7 of Dalton Avenue Square as shown on map recorded in Book 14, page 116, of Maps, in the office of said Recorder, said southwesterly corner being a point in the northerly line of the north roadway, 20 feet wide, of Santa Barbara Avenue, as shown on said last mentioned map;

27. Thence easterly along said northerly line of the north roadway, 20 feet wide, of Santa Barbara Avenue, to the southeasterly corner of Lot 56 of said Dalton Avenue Square;

28. Thence easterly in a direct line to the intersection of the center line of Normandie Avenue, 60 feet wide, with the southerly line of the northerly 30 feet of the north roadway, 45 feet wide, of Santa Barbara Avenue, as said intersection is shown on map of Tract No. 11593, recorded in Book 247, page 42, of Maps, in the office of said Recorder;

29. Thence easterly along said southerly line of the northerly 30 feet of the north roadway, 45 feet wide, of Santa Barbara Avenue to the center line of Vermont Avenue, 80 feet wide, as shown on said map of Tract No. 11593;

30. Thence easterly in a direct line to the southwesterly corner of Lot 10, Tract No. 2411, as shown on map recorded in Book 26, Page 77, of Maps, in the office of said Recorder, said southwesterly corner of Lot 10 being a point on the northerly line of the north roadway of Santa Barbara Avenue, as shown on said last mentioned map;

31. Thence easterly along said northerly line of the north roadway of Santa Barbara Avenue to the southeasterly corner of Lot 7 of said Tract No. 2411;

32. Thence easterly in a direct line to the southwesterly corner of Lot 1, Block A of Tract No. 4719, as shown on map recorded in Book 52, page 48, of Maps, in the office of said Recorder, said southwesterly corner of Lot 1, Block A, being a point on the northerly line of the north roadway of Santa Barbara Avenue as shown on said last mentioned map;

33. Thence easterly along said northerly line of the north roadway of Santa Barbara Avenue to the southeasterly corner of Lot 1, Block B, of said Tract No. 4719;

34. Thence southeasterly in a direct line to the intersection of the center line of Figueroa Street, 100 feet wide, with the center line of Santa Barbara Avenue, 60 feet wide, as said intersection is shown on Map of Bowen and Chamberlin's Main and Figueroa Street Tract No. 2, recorded in Book 7, page 5, of Maps, in the office of said Recorder;

35. Thence easterly along said center line of Santa Barbara Avenue, 60 feet wide, as shown on said map of Bowen and Chamberlin's Main and Figueroa Street Tract No. 2, to the center line of Broadway Place, formerly Moneta Avenue, 76 feet wide, as shown on said last mentioned map;

36. Thence easterly along the northerly line of the southerly 30 feet of Santa Barbara Avenue as shown on map of Main Street Boulevard Tract, recorded in Book 5, page 32, of Maps, in the office of said Recorder, to the center line of Main Street, 80 feet wide, as shown on said last mentioned map;

37. Thence easterly along the center line of Santa Barbara Avenue, 60 feet wide, as shown on Map of South Woodlawn, recorded in Book 4, page 5, of Maps, in the office of said Recorder, to the southeasterly line of the northwesterly 40 feet of San Pedro Street, as shown on said last mentioned Map;

38. Thence along said southeasterly line of the northwesterly 40 feet of San Pedro Street as shown on said Map of South Woodlawn to the center line of Santa Barbara Avenue, formerly Defiance Street, 60 feet wide, as shown on map of the Mettler Tract, recorded in Book 6, page 50, of Maps, in the office of said Recorder;

39. Thence easterly along said center line of Santa Barbara Avenue, formerly Defiance Street, 60 feet wide, to the center line of Griffith Avenue, 60 feet wide, as said Griffith Avenue is shown on said map of the Mettler Tract;

40. Thence southeasterly in a direct line to the point of intersection of the westerly line of McKinley Avenue, formerly Eureka Street, with the westerly prolongation of the center line of Santa Barbara Avenue, formerly Reno Street, 60 feet wide, as said streets are shown on Map of the Nadeau Orange Tract, recorded in Book 25, page 34, of Miscellaneous Records, in the office of said Recorder;

41. Thence easterly along said westerly prolongation and along said center line of Santa Barbara Avenue, formerly Reno Street, 60 feet wide, as said street is shown on said Map of the Nadeau Orange Tract, and continuing easterly along the easterly prolongation of said center line to the easterly line of Central Avenue, 80 feet wide, as shown on Map of Lienau's

Cottage Home Tract, recorded in Book 28, page 48, of Miscellaneous Records, in the office of said Recorder;

42. Thence northerly along said easterly line of Central Avenue, 80 feet wide, as shown on said map of Lienau's Cottage Home Tract, to the northwesterly corner of Lot 11, Block 1, of said Lienau's Cottage Home Tract, said northwesterly corner of Lot 11 being a point on the southerly line of Santa Barbara Avenue, formerly Herbert Street, as shown on said last mentioned map;

43. Thence easterly along said southerly line of Santa Barbara Avenue, formerly Herbert Street, to the northeasterly corner of Lot 1, Block 1, of said Lienau's Cottage Home Tract;

44. Thence easterly in a direct line to the northwesterly corner of Lot 1 of the Oakley's Home Tract, as shown on map recorded in Book 5, page 18, of Maps, in the office of said Recorder, said northwesterly corner of Lot 1 being a point on the southerly line of Santa Barbara Avenue, formerly 36th Street, 60 feet wide, as shown on said last mentioned map;

45. Thence easterly along said southerly line of Santa Barbara Avenue, formerly 36th Street, 60 feet wide, as shown on said map of Oakley's Home Tract and continuing easterly along the easterly prolongation of said southerly line to the westerly line of that certain tract of land shown on Plat Showing the Property of George Stephenson, recorded in Book 53, page 31, of Miscellaneous Records, in the office of said Recorder;

46. Thence southerly along said westerly line of said certain tract of land shown on Plat Showing the Property of George Stephenson to the southerly line of said certain tract of land, said southerly line being shown on said Plat as having a bearing of S 81° E and a distance of 7.03 chains;

47. Thence easterly along said southerly line of said certain tract of land to the southeasterly line of said certain tract of land, said southeasterly line being shown on said Plat as having a bearing of N 25° E and a distance of 18.84 chains;

48. Thence northeasterly along said southeasterly line of said certain tract of land, being also along the northwesterly line of Compton Avenue, formerly Orange Street, 60 feet wide, as shown on said Plat, to the westerly prolongation of the center line of Santa Barbara Avenue, formerly 30th Street, 60 feet wide, as shown on map of the Deeble Tract, recorded in Book 9, page 188, of Maps, in the office of said Recorder;

49. Thence easterly along said westerly prolongation and along said center line of Santa Barbara Avenue, formerly 30th Street, 60 feet wide, as

shown on said map of the Deeble Tract, to the westerly line of The Morgan Tract, as shown on map recorded in Book 5, page 5, of Maps, in the office of said Recorder;

50. Thence easterly in a direct line to the point of intersection of the easterly line of said Morgan Tract with the center line of Santa Barbara Avenue, formerly 30th Street, 50 feet wide, as said street is shown on Map of East Jefferson Street Tract No. 2, recorded in Book 7, page 92, of Maps, in the office of said Recorder;

51. Thence easterly along said center line of Santa Barbara Avenue, formerly 30th Street, 50 feet wide, and continuing easterly along the easterly prolongation of said center line of Santa Barbara Avenue to the east line of the west roadway, 40 feet wide, of Long Beach Avenue as shown on said map of East Jefferson Street Tract No. 2;

52. Thence easterly in a direct line to the point of intersection of the westerly line of the east roadway, 40 feet wide, of Long Beach Avenue as shown on Map of East Jefferson Street Tract No. 1, recorded in Book 7, page 113, of Maps, in the office of said Recorder, with the westerly prolongation of the center line of Santa Barbara Avenue, formerly 30th Street, 50 feet wide, as said street is shown on said last mentioned Map;

53. Thence easterly along said westerly prolongation and along said center line of Santa Barbara Avenue, formerly 30th Street, 50 feet wide, and continuing easterly along the easterly prolongation of said center line to the first intersection with the boundary line of the City of Los Angeles, said intersection being in Alameda Street;

54. Thence northerly and easterly along said boundary line of the City of Los Angeles to the easterly line of Alameda Street, 80 feet wide, as shown on map of Huntington Industrial Tract recorded in Book 6, page 10, of Maps, in the office of said Recorder;

55. Thence northerly along said easterly line of Alameda Street, 80 feet wide, as shown on said map of Huntington Industrial Tract to the northwesterly corner of Block A of said Huntington Industrial Tract;

56. Thence in a direct line to the southeasterly corner of Lot 73 of the Weiss Tract No. 2, as shown on map recorded in Book 2, page 42, of Maps, in the office of said Recorder, said southeasterly corner of Lot 73 being a point on the westerly line of Alameda Street, 80 feet wide, as shown on said last mentioned map;

57. Thence northerly along said westerly line of Alameda Street, 80 feet wide, to the northeasterly corner of Lot 62 of said Weiss Tract No. 2,

58. Thence northerly in a direct line to the southeasterly corner of Lot 189, Block A, of the Meade and Dalton Tract, as shown on map recorded in Book 37, page 50, of Miscellaneous Records, in the office of said Recorder, said southeasterly corner of Lot 189 being a point on the westerly line of Alameda Street, 80 feet wide, as shown on said last mentioned map;

59. Thence northerly along said westerly line of Alameda Street, 80 feet wide, to the northeasterly corner of Lot 1, Block A, of said Meade and Dalton Tract;

60. Thence easterly along the easterly prolongation of the northerly line of said Lot 1, Block A, of the Meade and Dalton Tract to the easterly line of Alameda Street, 80 feet wide, as shown on map of the Central Industrial Tract, recorded in Book 4, page 21, of Maps, in the office of said Recorder;

61. Thence northerly along said easterly line of Alameda Street, 80 feet wide, to the northwesterly corner of said Central Industrial Tract;

62. Thence continuing northerly along the easterly line of Alameda Street, 80 feet wide, as shown on map of the Hughes Manufacturing Co.'s Tract, recorded in Book 7, page 105, of Maps, in the office of said Recorder, to the southwesterly corner of Lot 7, Block A, of Ninth Street Tract Extension, as shown on map recorded in Book 55, page 89, of Miscellaneous Records, in the office of said Recorder;

63. Thence continuing northerly along the easterly line of Alameda Street as shown on said map of Ninth Street Tract Extension to northwesterly corner of Lot 1, Block A, of said Ninth Street Extension, said northwesterly corner of Lot 1 being a point on the easterly line of Alameda Street as shown on map of H. N. Elliott's Ninth Street Tract, recorded in Book 53, page 98, of Miscellaneous Records, in the office of said Recorder;

64. Thence continuing northerly along said easterly line of Alameda Street as shown on said map of H. N. Elliott's Ninth Street Tract and continuing northerly along the northerly prolongation of said easterly line to that certain line designated City Engineer's center line of Olympic Boulevard on map of Tract No. 11512, recorded in Book 221, page 29, of Maps, in the office of said Recorder;

65. Thence easterly along said certain line designated City Engineer's center line of Olympic Boulevard to the intersection with the center line of Mateo Street, as shown on said map of Tract No. 11512, said intersection being also shown on map of Tract No. 10068, recorded in Book 141, page 44, of Maps, in the office of said Recorder, as the intersection of the city center lines of Mateo Street, 60 feet wide, and Olympic Boulevard, formerly Ninth Street, 80 feet wide;

66. Thence continuing easterly along said city center line of Olympic Boulevard, formerly Ninth Street, 80 feet wide, to the intersection with the westerly prolongation of that certain center line of Olympic Boulevard shown on map filed in Book 52, page 5, of Record of Surveys, in the office of said Recorder, as having a bearing of North 89° 33' 00" West;

67. Thence easterly along said westerly prolongation and continuing easterly along said certain center line of Olympic Boulevard, shown or said map filed in Book 52, page 5, of Record of Surveys, as having a bearing of North 89° 33' 00" West, to the westerly line of the Official Bed of the Los Angeles River, as shown on said last mentioned map;

68. Thence easterly in a direct line to a point on the easterly line of the Official Bed of the Los Angeles River as shown on map of Tract No. 12316, recorded in Book 263, page 5, of Maps, in the office of said Recorder, said point being at the westerly terminus of that certain course of the center line of Olympic Boulevard shown on said last mentioned map as having a bearing of North 89° 21' West and a distance of 214.13 feet;

69. Thence easterly along said center line of Olympic Boulevard and continuing easterly along the center line of Olympic Boulevard as shown on said map of Tract No. 12316 to the intersection with the center line of that portion of Rio Vista Avenue, 60 feet wide, extending northerly from said Olympic Boulevard, as shown on said map of Tract No. 12316, said intersection being also shown on map of Tract No. 6783 recorded in Book 99, page 77, of Maps, in the office of said Recorder, as the intersection of Olympic Boulevard, formerly Ninth Street, 100 feet wide, with said center line of Rio Vista Avenue;

70. Thence southeasterly along said center line of Olympic Boulevard, formerly Ninth Street, 100 feet wide, and continuing southeasterly along said center line to the intersection with the center line of Mines Avenue, as shown on said map of Tract No. 6783;

71. Thence easterly along said center line of Olympic Boulevard to the intersection with the center line of Lorena Street, 82.50 feet wide, as shown on said map of Tract No. 6783;

72. Thence easterly in a direct line to the most westerly corner of Lot 636 of Tract No. 941, as shown on map recorded in Book 16, pages 194 and 195, of Maps, in the office of said Recorder, said most westerly corner being a point on the southerly boundary line of said Tract No. 941;

73. Thence easterly along said southerly boundary line of Tract No. 941 to the most easterly corner of Lot 480 of said Tract No. 941;

74. Thence easterly in a direct line to the intersection of the northeasterly line of Hollenbeck Avenue, 82.50 feet wide, as shown on said map of Tract No. 941, with the southerly boundary line of said Tract No. 941;

75. Thence easterly along said last mentioned southerly boundary line of Tract No. 941 to the boundary line of the City of Los Angeles;

76. Thence northerly and easterly along the boundary line of the City of Los Angeles to an angle point in the boundary line, said point also being a point in the boundary of the City of Monterey Park, at the northwest corner of Section 29, Township 1 South, Range 12 West, S.B.B. & M.;

77. Thence southerly along the boundary line of said City of Monterey Park and continuing along the boundary line of said City of Monterey Park, following all its various courses and curves, to its first intersection with the boundary line of the City of Montebello, said intersection being in Pomona Boulevard (formerly Third Street) between Gerhart Avenue and Bradshaw Avenue, at the north quarter section corner of fractional Section 4, Township 2 South, Range 12 West, S.B.B. & M., as shown on map of the Repetto Rancho recorded in Book 759, pages 21 and 22, of Deeds, in the Office of the Recorder of the County of Los Angeles;

78. Thence easterly along the common boundary line of said City of Monterey Park and said City of Montebello to the easterly terminus of said common boundary line, said easterly terminus being at the intersection of said common boundary line with the southwesterly line of Rancho La Merced, as shown on map recorded in Book 13, page 24, of Patents, in the office of said Recorder, and being in the south line of Township 1 South, Range 12 West, S.B.B. & M.;

79. Thence easterly along the boundary line of said City of Monterey Park and said south line of Township 1 South, Range 12 West, S.B.B. & M., to an angle point in said boundary line of the City of Monterey Park;

80. Thence easterly along said south line of Township 1 South, Range 12 West, S.B.B. & M., to the easterly line of Tract No. 10063 as shown on map recorded in Book 179, pages 32 to 34, inclusive, of Maps, in the office of said Recorder;

81. Thence southerly along said easterly line of Tract No. 10063 to its first intersection with the boundary line of said City of Montebello;

82. Thence easterly along the boundary line of said City of Montebello and continuing along the boundary line of said City of Montebello, following all its various courses and curves, to its intersection with the Compromised Dividing Line between the Rancho Paso de Bartolo on the South Side and the Ranchos La Puente, Potrero de Felipe Lugo and La Merced on the North Side, as shown on map filed in Book 1, page 73, Record of Surveys, in the office of said Recorder;

83. Thence easterly along said Compromised Dividing Line to a point thereon, distant 1068.62 feet westerly, measured along said Compromised Dividing Line, from the center line of Cate Road (now Durfee Avenue), 40 feet wide, as described in deed to the County of Los Angeles, recorded in Book 1207, page 74, of Deeds, in the office of said Recorder;

84. Thence easterly in a direct line to the point of intersection of said center line of Cate Road (now Durfee Avenue), with a line bearing South 86° 40' 44" West from a point in the northwesterly line of Lot 12, Tract No. 688, as shown on map recorded in Book 15, page 171, of Maps, in the office of said Recorder, said last mentioned point being distant North 24° 55' 13" East 556.72 feet, measured along said northwesterly line of Lot 12, from the southwesterly corner of said Lot 12;

85. Thence North 86° 40' 44" East 2759.06 feet, more or less, to the northwesterly prolongation of the northeasterly line of Parcel 1 of land described in deed to Walter G. Kruse, et ux., recorded in Book 25982, page 70, of Official Records, in the office of said Recorder;

86. Thence easterly in a direct line to an angle point in the southerly line of Lot 11, of aforementioned Tract No. 688, from which angle point the most westerly corner of said Lot 11 is shown on said map of Tract No. 688 to be distant 453.30 feet S. 68° 51-1/2' W., measured along said southerly line of Lot 11;

87. Thence southerly in a direct line to an angle point in the northwesterly line of Lot 1, Cohn's Partition of Lots 26, 27, 29 and 32 as shown on map recorded in Book 60, pages 3 and 4, of Miscellaneous Records, in the office of said Recorder, said last mentioned angle point being shown on said map of Cohn's Partition of Lots 26, 27, 29 and 32 to be located as follows:

Beginning at the most westerly corner of said Lot 1; thence, N. 49° 52' E. 9.00 chains; thence N. 23° 13' E. 5.09 chains to said last mentioned angle point;

88. Thence southwesterly along said northwesterly line of Lot 1 to said most westerly corner of Lot 1, said most westerly corner also being the most northerly corner of Lot 2 of said Cohn's Partition of Lots 26, 27, 29 and 32;

89. Thence southwesterly along the northwesterly line of said Lot 2 and continuing along the line of said Lot 2, following all its various courses, to the most westerly corner of Lot 7, of said Cohn's Partition of Lots 26, 27, 29 and 32;

90. Thence southerly along the westerly line of said Lot 7 and continuing along the southerly prolongation of said westerly line of Lot 7 to the easterly prolongation of the center line of Guirado Street, 40 feet wide, (now Pioneer Boulevard) as shown on map of Tract No. 3584, recorded in Book 38, page 70, of Maps, in the office of said Recorder;

91. Thence along said easterly prolongation of the center line of Guirado Street, 40 feet wide, (now Pioneer Boulevard), to the center line of Workman Mill Road as described in deed to the County of Los Angeles recorded in Book 12367, page 75, of Official Records, in the office of said Recorder;

92. Thence southerly along said center line of Workman Mill Road, following all its various courses and curves, to the northerly terminus of that certain course having a bearing of N. 6° 10' 15" E. in the center line of Workman Mill Road, as shown on map of Tract No. 6041 recorded in Book 180, pages 12 to 14, inclusive, of Maps, in the office of said Recorder;

93. Thence southerly along the center line of Workman Mill Road as shown on said map of Tract No. 6041 and as shown on map of Tract No. 14971, recorded in Book 341, pages 5 to 10 inclusive, of Maps, in the office of said Recorder, to the westerly prolongation of the northerly line of Lot 3, shown on said map of Tract No. 14971 as having a bearing and length of S. 83° 49' 45" E., 221.86 feet, said northerly line of Lot 3 also being in the northerly boundary line of said Tract 14971;

94. Thence easterly along said westerly prolongation, said northerly line of Lot 3 and said northerly boundary line of Tract No. 14971 and continuing along the boundary line of said Tract No. 14971, following all its various courses, to the westerly line of Lot 24, of Cohn's Partition of Lot 31, as shown on map recorded in Book 60, page 6, of Miscellaneous Records, in the office of said Recorder;

95. Thence northerly along said westerly line of Lot 24 to the westerly prolongation of the north line of Section 16, Township 2 South, Range 11 West, S.B.B. U M.;

96. Thence easterly along said westerly prolongation and along the north line of said Section 16, to the northeast corner of said Section 16;

97. Thence southerly in a direct line to the northeasterly corner of the City of Whittier, said northeasterly corner being also the northeasterly corner of that certain annexation to said City of Whittier designated Annexation of 1907;

98. Thence southerly along the boundary line of said City of Whittier to its intersection with the north line, or its westerly prolongation, of Section 22, said last mentioned Township and Range;

99. Thence easterly along said north line of Section 22, or along said westerly prolongation and said north line of Section 22, to the northeast corner of said Section 22;

100. Thence southerly along the east line of said Section 22 to the west quarter corner of Section 23, said last mentioned Township and Range;

101. Thence easterly along the east and west quarter section lines of said Section 23 to the east quarter corner of said Section 23;

102. Thence southerly along the east line of said Section 23 to the northwest corner of Section 25, said last mentioned Township and Range;

103. Thence easterly along the north line of said Section 25 to the westerly line of Tract No. 2390 as shown on map recorded in Book 23, page 29, of Maps, in the office of said Recorder;

104. Thence northerly along said westerly line of Tract No. 2390, to the northwesterly corner of said Tract;

105. Thence easterly along the northerly line of said Tract No. 2390 to the northeasterly corner of said Tract;

106. Thence southerly along the easterly line of said Tract No. 2390 to the southeasterly corner of said Tract, said corner also being in northerly line of Lot 3 of the New England Oil Company Tract, as shown on map recorded in Book 17, page 131, of Maps, in the office of said Recorder;

107. Thence easterly and southerly along the northerly and easterly lines of said Lot 3 to the southeasterly corner of said Lot 3, said corner also being in the southerly line of said New England Oil Company Tract;

108. Thence easterly and northerly along the southerly and easterly lines of said New England Oil Company Tract to the northeasterly corner of Lot 13 of said last mentioned Tract, said northeasterly corner also being in the southerly line of Lot 5, Tract No. 4380, as shown on map recorded in Book 48, pages 46 and 47, of Maps, in the office of said Recorder;

109. Thence easterly along said southerly line of Lot 5 to the southeasterly corner of said Lot 5;

110. Thence easterly in a direct line to the southwesterly corner of Lot 2, Tract No. 3422, as shown on map recorded in Book 37, page 51, of Maps, in the office of said Recorder;

111. Thence easterly along the southerly line of said Lot 2, to the easterly line of Rancho La Habra, as shown on map recorded in Book 1, pages 275 and 276, of Patents, in the office of said Recorder;

112. Thence southerly along said easterly line of Rancho La Habra to its intersection with the southerly boundary line of the County of Los Angeles;

113. Thence westerly along said southerly boundary line of the County of Los Angeles and continuing along the boundary line of said County of Los Angeles, following all its various courses and curves to the point of beginning.

The boundary line of the County of Los Angeles and the boundary line of the City of Los Angeles referred to herein, except where otherwise expressly designated, are such boundary lines as the same existed at 12:00 noon on October 31, 1958.

APPENDIX 2

CURRENT VERSION OF WATER RIGHT HOLDERS

Central Basin Water rights Holders

Party ID	Party	Allowed Pumping Allocation (APA)
0020	A B C Unified School District	298.00
0107	American Textile Maintenance Company	65.00
0125	Angeles Abbey Memorial Park, Inc	4.00
0127	Aqua Capital Management LP	3,760.00
0120	Arco Metals Co, American Brass	0.00
0150	Artesia Cemetery District	12.00
0160	Artesia, City of	24.00
0210	Atkinson Brick Company	9.00
0220	Atlantic Richfield Company	0.00
0229	Automobile Club of Southern California	6.00
0265	Baker Commodities, Inc	60.00
0387	Bell Gardens, City of	1,914.00
0420	Bellflower Home Garden Water Company	306.00
0430	Bellflower Unified School District	89.00
0410	Bellflower, City of	1,380.00
0445	Bellflower-Somerset Mutual Water Company	4,312.88
0642	Boy Scouts of America, Long Beach Area	1.00
0657	Buell, Mary Dolores	1.00
0679	California-American Water Company	2,067.00
0681	California Domestic Water Company	87.00
0686	California, State of	50.00
0740	California Water Service Company	11,774.00
0742	California Water Service Company (Dominguez)	6,480.00
0795	Central Basin Municipal Water District	50.65
0826	Cerritos, City of	4,680.03
0830	Cerritos Community College District	147.00
0855	Chang, I-Hsin and Associates	1.00
0885	Chevron U S A, Inc	94.00
0970	Coast Packing Company	530.00
1017	Commerce, City of	5,081.00
1020	Compton, City of	5,780.00
1030	Compton Unified School District	38.00
1115	Corning Trust	3.75
1165	Crandell, F.J.	1.00
1236	Darling-Delaware Company, Inc	117.00
1385	Dolan, J.E., P.A., & T.P.	2.00

Central Basin Water rights Holders

Party ID	Party	Allowed Pumping Allocation (APA)
1450	Downey, City of	16,553.62
1550	El Rancho Unified School District	55.00
1560	Emoto, John H	2.00
1572	Equilon Enterprises, LLC	6.00
1597	Exide Technologies	62.00
1606	Farmers & Merchants Trust Co of Long Beach	14.00
1700	Flesch, Elizabeth, et al	14.00
1719	Footbridge 1 Trust	3.75
1720	Ford Motor Company	4.50
1726	Frampton, Harvey	10.00
1735	Frampton, William H	25.00
1843	Golden State Water Company	16,439.20
1960	Gordon, Robert E	4.00
1988	Graham, Hugh W or Marcia K, Trustees	6.00
2155	Harada Brothers	6.00
2209	Hathaway, Jesse R	4.07
2211	Hathaway, Merrie F	1.86
2212	Hathaway, Richard F, Jr.	4.07
2213	Hathaway, William A	4.07
2214	Hathaway, Loline	4.08
2378	Huntington Park, City of	3,853.00
2440	Inglewood Park Cemetery	317.00
2493	Jones Company, The	0.00
2710	Kotake, Masao	27.97
2749	La Habra Heights County Water District	2,596.00
2770	Lakewood, City of	9,432.00
2884	Lincoln Memorial Park, Inc	34.00
2890	Little Lake Cemetery District	14.00
2910	Long Beach, City of	32,692.00
2920	Los Angeles, City of	15,000.00
2930	Los Angeles County Rancho Los Amigos	490.00
3010	Lunday-Thagard Oil Company	212.00
3040	Lussman, Paul H, Jr., et al	7.00
3060	Lynwood, City of	5,337.00
3080	Lynwood Park Mutual Water Company	222.00
3140	Martin, Mary	28.00

Central Basin Water rights Holders

Party ID	Party	Allowed Pumping Allocation (APA)
3170	Maywood Mutual Water Company No 1	741.00
3180	Maywood Mutual Water Company No 2	912.00
3190	Maywood Mutual Water Company No 3	1,407.00
3210	Mellano, G, et al	13.00
3301	Mitsuuchi, Mary F Trust	11.00
3351	Montebello, City of	386.50
3360	Montebello Land and Water Company	1,694.00
3501	Nancy Dee Keane Living Trust	4.00
3514	New England Mutual Life Insurance Company	2.00
3517	Newark Group, Inc., The	257.00
3545	Northrop Grumman Systems Corporation	4.50
3550	Norwalk, City of	2,273.00
3560	Norwalk-La Mirada Unified School District	378.00
3578	O N K Farms	8.00
3605	Oltmans Construction Company	3.00
3640	Orchard Dale Water District	1,254.00
3705	PABCO Building Products, LLC	500.00
3745	Paradise Memorial Park	16.00
3755	Paramount, City of	5,883.00
3760	Paramount Unified School District	46.00
3780	Park Water Company	2.30
3787	Patrician Associates Inc/Majestic Realty Company	12.00
3828	Petersburg, L.P.	300.00
3847	Pico Boys Baseball, Inc	13.00
3853	Pico Rivera, City of	5,579.00
3850	Pico Water District	3,624.00
3958	Puente Basin Water Agency	365.00
3994	Randall, Villis Family Trust	4.00
4108	Rippy, Francine	4.07
4115	Rockview Dairies, Inc	101.00
4116	Rocky Mountain Industries, Inc	0.00
4150	Roman Catholic Archbishop of Los Angeles	347.00
4160	Rosales, Elvira C	3.00
4165	Rosing, L S Trust and P Schwartz	6.00
4175	Rowland Water District	1.00
4300	St John Bosco School	42.00

Central Basin Water rights Holders

Party ID	Party	Allowed Pumping Allocation (APA)
4330	San Gabriel Valley Water Company	2,565.35
4335	Santa Fe Springs, City of	4,035.78
4345	Sativa - Los Angeles County Water District	474.00
4349	Scantlebury, Robert P	4.00
4378	September Properties, LLC	22.00
4450	Signal Hill, City of	2,022.00
4473	Simmons Survivor's Trust	33.00
4590	South Gate, City of	11,183.00
4540	South Montebello Irrigation District	1,268.00
4549	Southern California Edison Company	670.00
4685	Statewide Stations, Inc	1.00
4810	Suburban Water Systems	3,721.00
4915	Taurek, Mary	1.00
4934	Tesoro Logistics Operations	54.00
4980	Tract Number One Hundred and Eighty Water Co	2,137.00
4990	Tract 349 Mutual Water Company	423.00
5019	Tucker, W and/or Bobby Robertson	8.00
5358	Vangrootheest, Ernest A	10.00
5460	Vernon, City of	7,539.00
5490	Virginia Country Club	274.00
5610	Walnut Park Mutual Water Company	996.00
5528	WEMS, Inc.	8.00
5660	Whittier, City of	895.00
5670	Whittier Union High School District	100.00
5750	Wolfsberger, Helen and Christine Joseph	2.00
5800	Yamamoto, George and Alice	14.00
5903	Zane Living Trust	0.00
	Central Basin Total	**217,367.00**

Appendix 3

CENTRAL BASIN SMALL WATER PRODUCERS GROUP

As used in the Central Basin Judgment, the "Small Water Producers Group" shall refer to a voluntary group consisting of parties to the Central Basin Judgment with an Annual Pumping Allocation no greater than 5,000 acre-feet, acting jointly to represent its members with regards to interests specific to them and their constituents and/or customers concerning the management of the Central Basin and the administration and enforcement of this Judgment. Membership in the Small Water Producers Group may be modified from time to time by affirmative vote of the then-current composition of said Group, provided that each member thereof shall hold no greater than 5,000 acre-feet of Allowed Pumping Allocation.

Any benefit or right attributed to the Group by the Judgment, including the reserved seat on the Water Rights Panel, shall be valid and enforceable, so long as the Group's membership consists of a minimum of 5 parties to the Central Basin Judgment who are Water Purveyors., .

As of the time of entry of this Third Amended Judgment, the Small Water Producers Group consists of:

Bellflower-Somerset Mutual Water Company
La Habra Heights County Water District
Montebello Land and Water Company
City of Norwalk
Orchard Dale Water District
Pico Water District
Sativa -- Los Angeles County Water District
South Montebello Irrigation District

Appendix 4

PERMITTED EXISTING EXPORTS

The Agreement among Rowland Water District, on the one hand, and La Habra Heights County Water District and Orchard Dale Water District, on the other hand, allowing for maximum production of 2,500 acre-feet per year.

The Agreement between Puente Basin Water Agency and California Domestic Water Company, allowing for maximum production of 2,500 acre-feet per year.

PROOF OF SERVICE

STATE OF CALIFORNIA, COUNTY OF LOS ANGELES

I am employed in the county of LOS ANGELES, State of California. I am over the age of 18 and not a party to the within action; my business address is: **301 North Lake Avenue, 10th Floor, Pasadena, California 91101**

On DECEMBER 27, 2013, I served the foregoing document described as **THIRD AMENDED JUDGMENT** on **INTERESTED PARTIES** in this action

☑ by placing the true copies thereof enclosed in sealed enveloped addressed as stated on the attached mailing list:

☐ by placing ☐ the original ☐ a true copy thereof enclosed in sealed envelopes addressed as follows:

SEE ATTACHED MAILING LIST

☑ BY MAIL

☐ I deposited such envelope in the mail at PASADENA, California.
The envelope was mailed with postage thereon fully prepaid.

☑ I caused such envelope to be deposited in the mail at PASADENA, California.
The envelope was mailed with postage thereon fully prepaid.
I am "readily familiar" with firm's practice of collection and processing correspondence for mailing. It is deposited with U.S. postal service on that same day in the ordinary course of business. I am aware that on motion of party served, service is presumed invalid if postal cancellation date or postage meter date is more than 1 day after date of deposit for mailing in affidavit.

Executed on DECEMBER 27, 2013, at PASADENA, California.

☐ ** (BY PERSONAL SERVICE) I delivered such envelope by hand to the offices of the addressee.
Executed on _____ at _____, California.

☑ (State) I declare under penalty of perjury under the laws of the State of California that the above is true and correct.

☐ (Federal) I declare that I am employed in the office of a member of the bar of this court at whose direction the service was made.

PAMELA J. CHILDRESS
(NAME)

Pamela J. Childress

CENTRAL BASIN SERVICE LIST - CASE NO. C 786 656

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CENTRAL BASIN SERVICE LIST - CASE NO. C 786 656

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04/14/2016

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Converting Waste Into Resources | www.LACSD.org

1. A description of your wastewater collection and treatment systems; including:

a. *Treatment plant and discharge location name and description*

The Sanitation District's treatment facility receiving wastewater from the City of Lakewood service area is the Long Beach Water Reclamation Plant (LBWRP), 7400 E. Willow Street, Long Beach, CA 90815 (Figures 1 and 31). The LBWRP has a design capacity of 25 million gallons per day (MGD). The discharge point from this facility (NPDES No. 001) is into Coyote Creek downstream of Willow Street and upstream of the confluence with the San Gabriel River (Figures 1 and 3). The Sanitation District's treatment facility from which the City of Lakewood receives recycled water is the Los Coyotes Water Reclamation Plant (LCWRP), 16515 Piuma Avenue, Cerritos, CA 90703 (Figures 1 and 2, the latter using GSWC's Artesia system Figure 2-1). The LCWRP has a design capacity of 37.5 million gallons per day (MGD). The discharge point from this facility (NPDES No. 001) is into the San Gabriel River just downstream of Alondra Blvd.

b. Method of disposal

Recycled water produced by the LCWRP is either delivered through recycled water distribution systems operated by the City of Cerritos, the City of Lakewood, the City of Bellflower, or the Central Basin Municipal Water District (CBMWD) for beneficial, non-potable reuse, or it is discharged into the San Gabriel River where it flows into the Pacific Ocean. Recycled water produced by the LBWRP is either delivered through recycled water distribution systems operated by the Long Beach Water Department (LBWD) for beneficial, non-potable reuse, delivered by LBWD to the Water Replenishment District of Southern California for advanced treatment and injection into the Alamitos Seawater Intrusion Barrier, or it is discharged into Coyote Creek which joins the San Gabriel River before it flows into the Pacific Ocean.

c. Treatment level

Recycled water produced by both the LCWRP and LBWRP is at the tertiary level. The treatment process consists of primary sedimentation, biological oxidation, coagulation, secondary clarification, inert media filtration, and disinfection using chlorine.

d. Service area

The wastewater collection and treatment system in the Sanitation Districts' Los Angeles metropolitan service area (i.e., the area outside of the City of Los Angeles and south of the San Gabriel Mountains), known as the Joint Outfall System (JOS) is interconnected between a main ocean disposal plant in the City of Carson and six WRPs located upstream in the trunk sewer system. The upstream WRPs take a portion of the wastewater flow generated in the JOS into their facilities for treatment. As such, the tributary service area for the LCWRP is generally to the north and northeast of the plant (Figure 4). The tributary service area for the LBWRP is generally to the north and west of the plant (Figure 5).

2. The quantity of:

e. Wastewater collected in 2015 (metered or estimated)

Approximately 24.41 MGD of wastewater was treated at the LCWRP in 2015. Approximately 14.68 MGD of wastewater was treated at the LBWRP in 2015.

f. Wastewater discharged in 2015

Approximately 20.75 MGD of recycled water was produced and discharged from the LCWRP in 2015. Approximately 12.44 MGD of recycled water was produced and discharged from the LBWRP in 2015.

g. Water recycled within Lakewood service area in 2015

Approximately 0.44 MGD (a total of 158.76 million gallons) of recycled water from the LCWRP was reused within the City of Lakewood's service area in 2015. An additional 0.08 MGD (a total of 29.78 million gallons) of recycled water from the LCWRP was delivered through the CBMWD and Golden State Water Company and reused within the City of Lakewood.

h. Water recycled outside of Lakewood service area in 2015

Approximately 5.69 MGD (a total of 2,075.33 million gallons) of recycled water from the LCWRP was delivered through the Cerritos, Lakewood, Bellflower and CBMWD distribution systems and reused in 2015.

3. A description, level of treatment, and quantity of existing 2015 and potential future uses of recycled water including: agricultural irrigation, landscape irrigation, wildlife habitat enhancement, and other appropriate uses within the City of Lakewood service area.

All recycled water produced by the LCWRP and the LBWRP is at the tertiary level, whether it is distributed for beneficial reuse (regardless of type of use) or discharged into the river for disposal. Potential future uses in GSWC's three service areas would most likely be limited to landscape irrigation and/or industrial process water, as there are no known agricultural areas or wildlife habitat enhancement projects.

4. What is the projected use of recycled water within the City of Lakewood systems at the end of 5, 10, 15, 20, and 25 years?

The LCWRP is one of the Sanitation Districts' few WRPs that have significant amounts of unused recycled water that can be distributed to potential users. However, future recycled water use in the Sanitation Districts' service area is almost entirely the responsibility of the wholesale and retail water agencies distributing and purveying the Sanitation Districts' recycled water supplies. The recycled water produced by the LBWRP is allocated to the Long Beach Water Department, with none of the production being available for additional uses outside of the LBWD service area. In the Lakewood service areas, projections of future use would be the responsibility of CBMWD and the City.

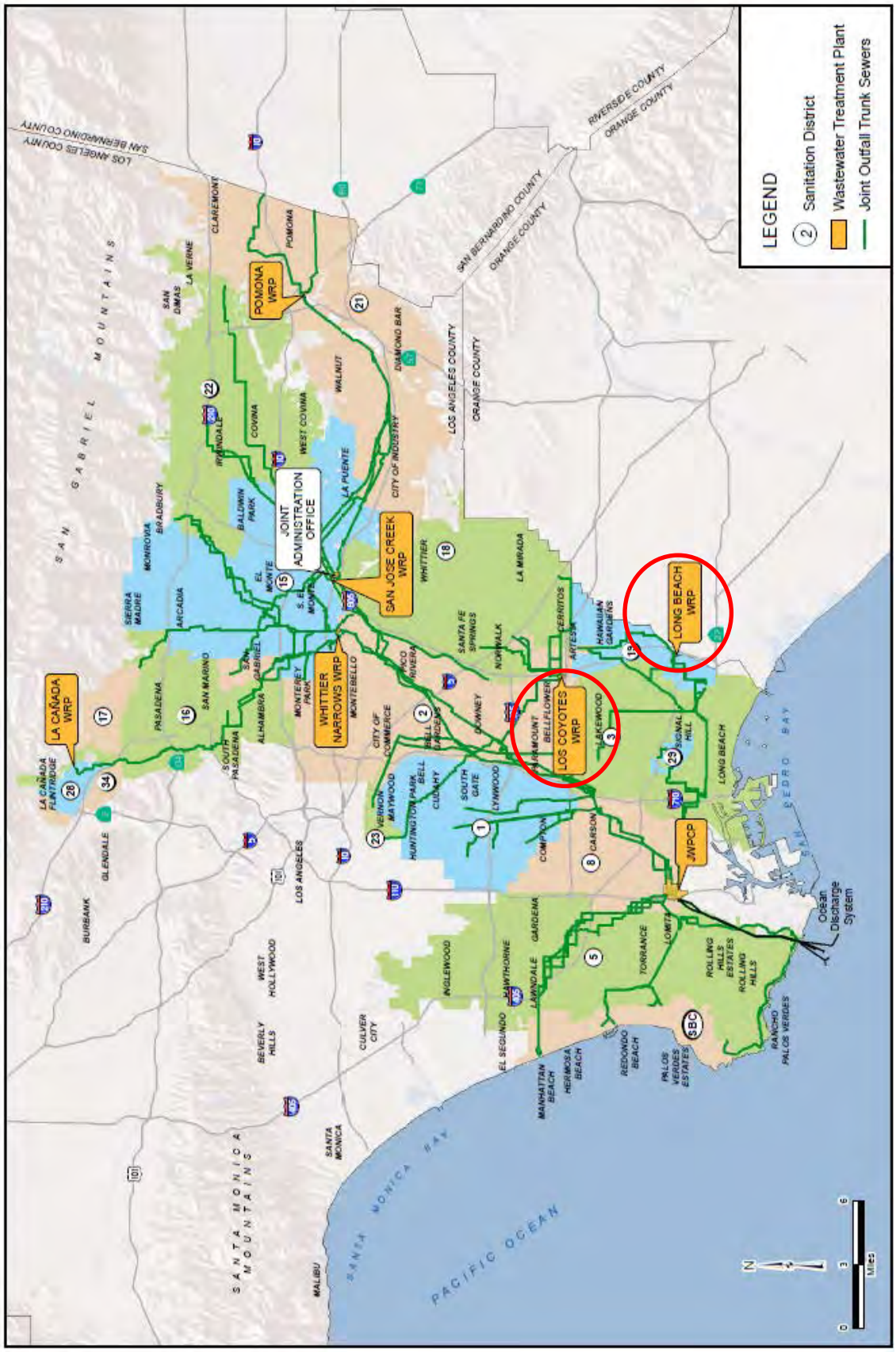
5. What actions are being taken to encourage the use of recycled water and the projected results in terms of acre-feet of recycled water used per year?

Development of additional recycled water usage in Lakewood's service area is the responsibility of CBMWD and the City; as such, the Sanitation Districts have no information regarding this.

6. Is there a plan for optimizing the use of recycled water within the Artesia, Bell-Bell Garden, and Florence-Graham service area? If so please describe.

While Sanitation Districts' staff is available to assist in the development and permitting of plans for optimizing the use of recycled water in GSWC's service areas, such plans are ultimately the responsibility of CBMWD and GSWC to implement.

FIGURE 1: SANITATION DISTRICTS' JOINT OUTFALL SYSTEM



#3659444

FIGURE 2: LOCATION OF LOS COYOTES WRP

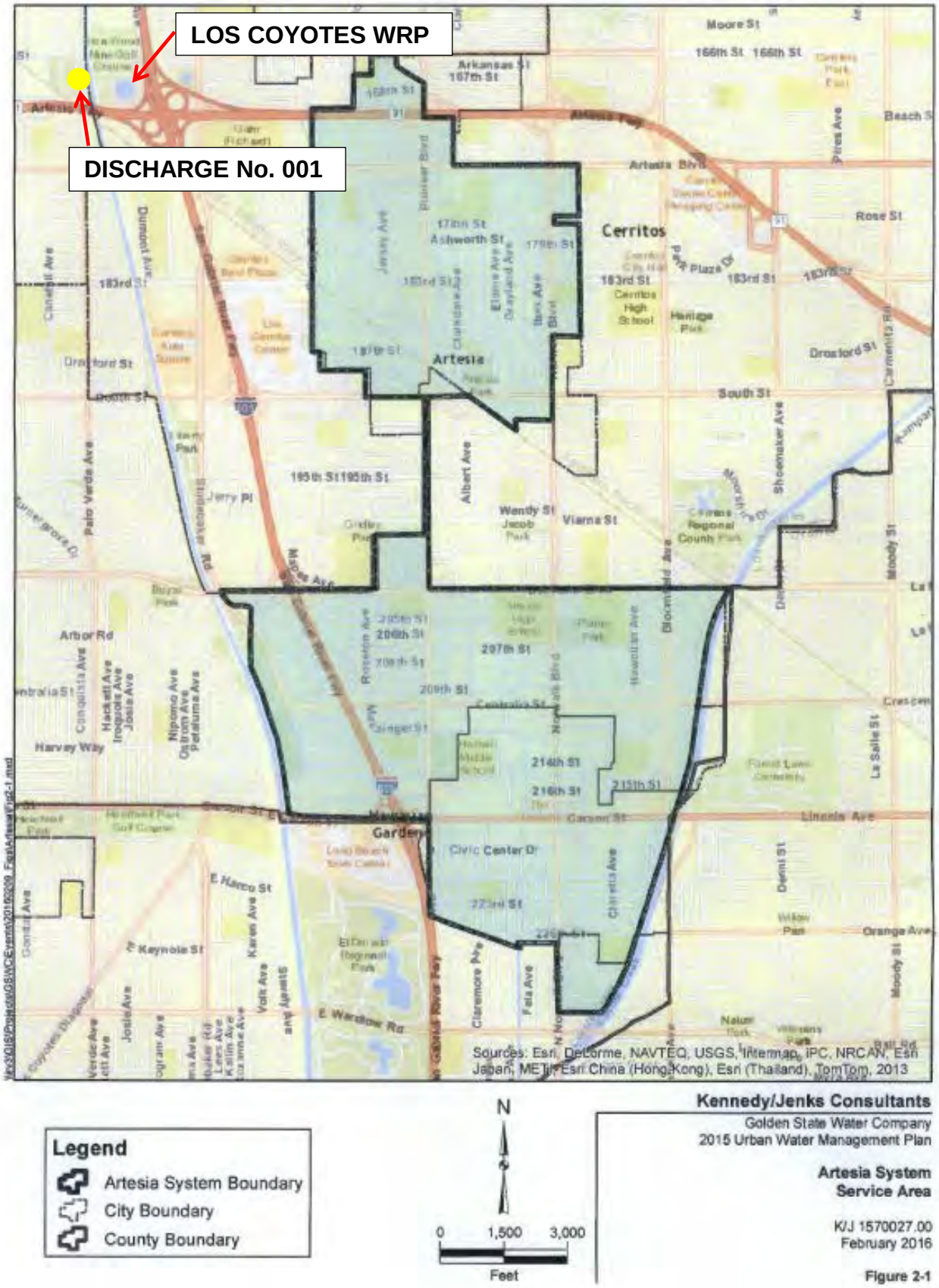


FIGURE 3: LOCATION OF LONG BEACH WRP

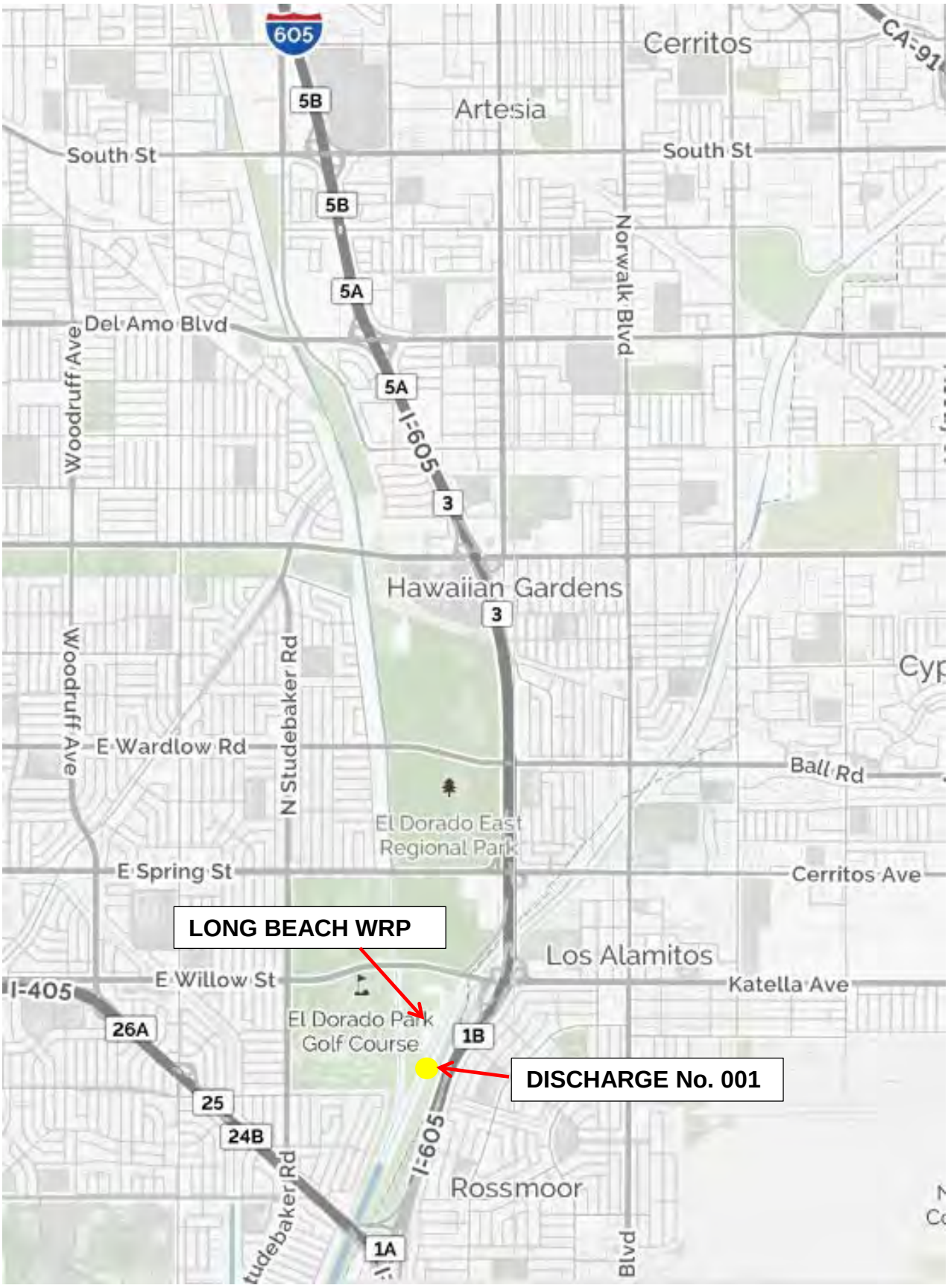


FIGURE 4: SEWER SYSTEM TRIBUTARY TO LOS COYOTES WRP

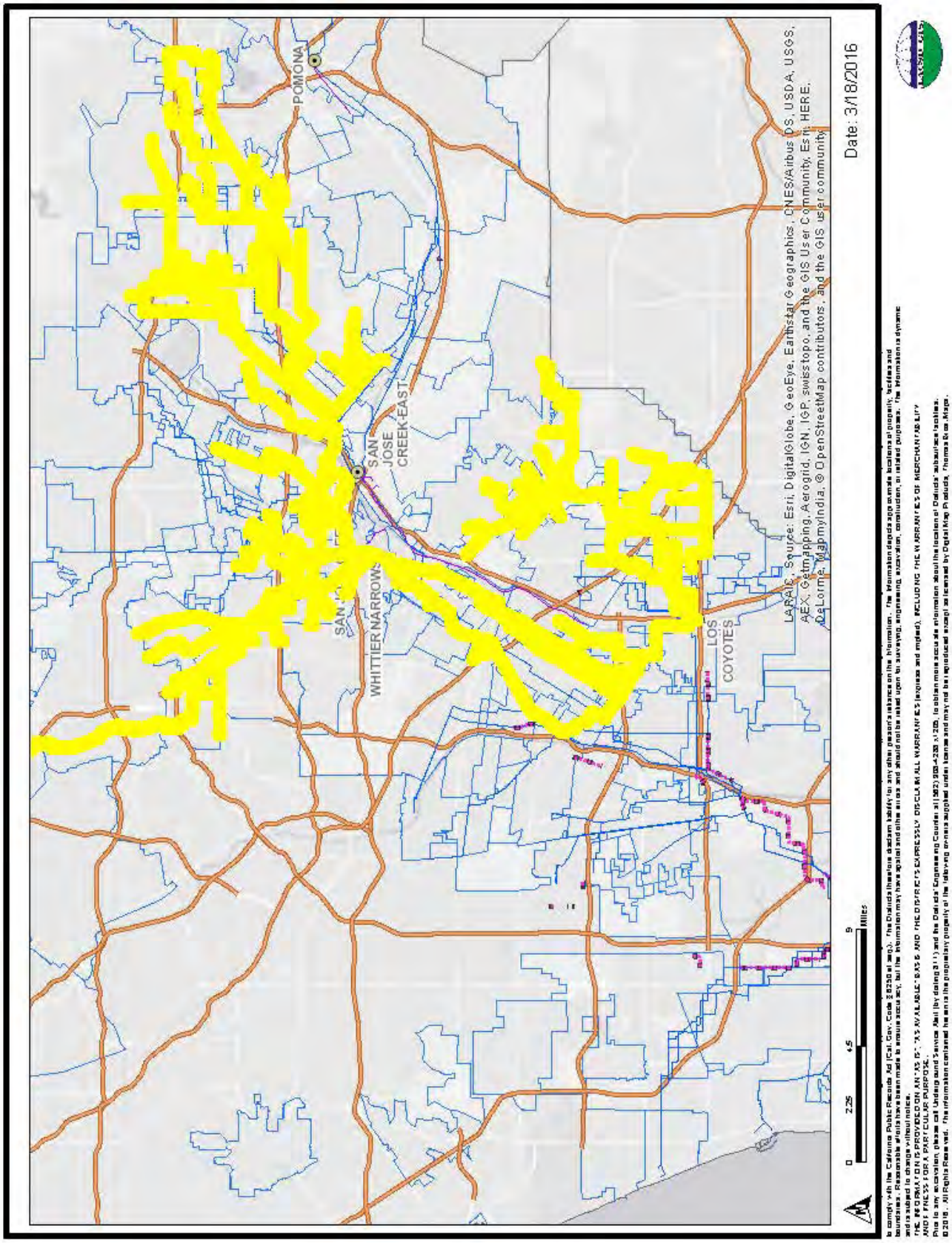
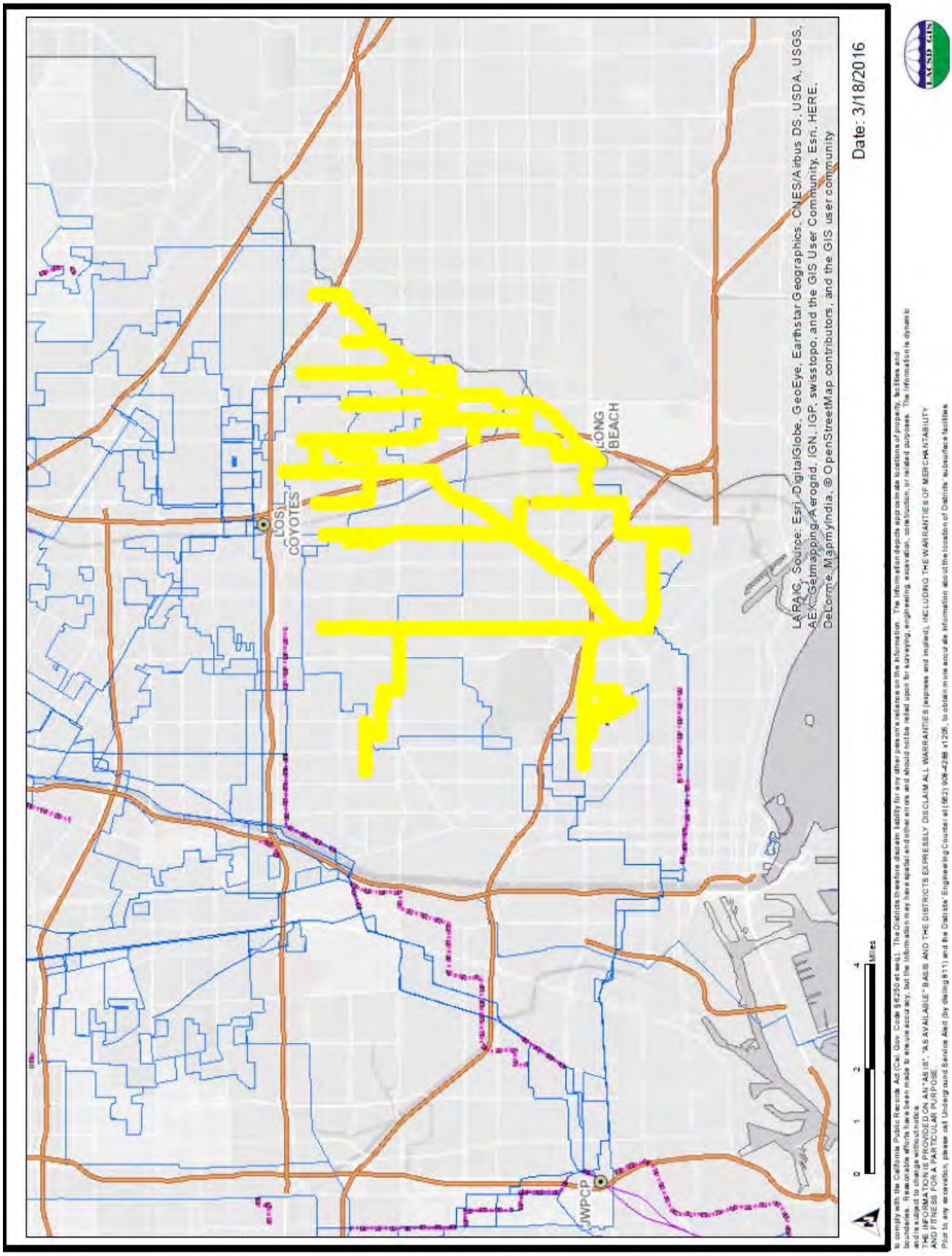


FIGURE 5: SEWER SYSTEM TRIBUTARY TO LONG BEACH WRP



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ATTACHMENT 6

City of Lakewood

Feasibility Study for the Proposed Expansion of the Lakewood Recycled Water System

in

Los Angeles County, California

July 15, 2010

Prepared by Willdan Engineering
Under the supervision of
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Executive Summary

In November 2009, Senate Bill 7 was signed into law, which added comprehensive water conservation requirements into the State Water Code. These requirements in concert with existing statutes constitute more stringent water management criteria for every water supplier throughout the State. The statutes are directed toward reducing the amount of water used by every consumer and thereby increasing water use efficiency practices in these times of reduced or limited water supplies throughout the State, and the entire southwestern states.

Part of the water conservation criteria involves reducing the current levels of potable water consumption by allowing the exchange of potable water usage for irrigation with recycled water use in its place. This is especially effective in the irrigation of sizeable landscape sites and certain agricultural crops. Therefore in order for the City of Lakewood to further reduce its potable water usage; this feasibility study for the Proposed Expansion of the Lakewood Recycled Water System was undertaken.

The study involved identifying existing irrigation sites where potable water usage is occurring, and their proximity to both the existing recycled water distribution pipelines, and the feasibility of extending additional pipelines to serve the identified irrigation sites. The study identified eight (8) large irrigated sites (parks and schools) and forth-nine (49) metered median and parkway service locations that could contribute to the exchange of potable for recycled water use. To provide service to the identified sites will require the installation of almost 40,700 linear feet (7.7 miles) of distribution pipe (purple) with new service laterals and meters for delivery of recycled water in place of potable water. The projected amount of total potable water offset by recycled water is 159.3 acre-feet per year. The cost to design and construct the pipelines and service connections is estimated at $7,250,668.

Background

On June 19, 1986, the Cities of Cerritos and Lakewood entered into an agreement (Reclaimed Water User Agreement) under which the cities agreed to design, bid and construct reclaimed water distribution facilities in their respective agencies. The agreement also obligated the City of Cerritos to sell up to 130 acre-feet of reclaimed water per year to the City of Lakewood, subject to the provision of receipt of such water supply from the County Sanitation Districts of Los Angeles County and the City of Lakewood's application for and purchase of the available reclaimed water on an as needed basis.

On August 5, 1987 the Cities of Cerritos and Lakewood entered into an amendment modifying section 2 of the initial agreement. The first amendment increased the annual amount of reclaimed water to be sold to the City of Lakewood to 450 acre-feet subject to

the construction of reclaimed water distribution facilities and obtaining reclaimed water from the County Sanitation Districts of Los Angeles County.
During calendar year 1988, Phase 1 of the City of Lakewood Reclaimed Water System was constructed. This initial water system served reclaimed water for irrigation use to many park, school and public building sites, and a few street parkways within the easterly half of the City's water service area. The properties currently served and the system pipelines are shown on exhibit map # 1 following this page.

On June 5, 1991 the Cities of Cerritos and Lakewood entered into a second amendment modifying section 3 of the initial agreement. This amendment changed the method used to calculate the price of reclaimed water sold under the agreement.

On July 28, 2009 the City of Lakewood entered into an agreement with Willdan Engineering to prepare a feasibility study for a proposed expansion of the Lakewood Recycled Water System. The study involves review of available City records on the existing recycled water system and those mapped features of the existing irrigation systems delivering potable water to various parks, schools, medians and parkways in the westerly half and some additional parkways and medians in the easterly half of the City water service area. The City's proposed expansion service areas and pipelines are shown on exhibit map # 2 following this page.

On August 31, 2009 the project kick-off meeting was held in the Department of Water Resources office at 5812 Arbor Road. Some of the pertinent information was provided and requests were noted for other information needed for the study. Meeting notes were produced and distributed within the week. As the requested information was received it was reviewed, and these reviews were followed by an on site meeting with two Recreation and Community Services personnel to discuss pertinent irrigation issues and related site observations were conducted. The gathered information then allowed the evaluation study to begin taking form.

In September, 2009, the City requested some additional irrigation areas be included in the evaluation work for use of recycled water in lieu of potable water. These included the parkways and medians on Lakewood Blvd. and Del Amo Blvd. abutting the Lakewood Center Mall.

Review of Records and Field Inspections

Records and information received from the City included: Lakewood Municipal Code Sections 5600 (Reclaimed Water) and 8600 (Water Conservation); recycled water usage reports for FY's 2000/2001 through 2008/2009; preliminary analysis of additional recycled water usage; as-built drawings of the 1987 recycled water system design plans; City water atlas maps in GIS format which contain the entire system, including feature attributes of the water meter locations; citywide substructure maps; and the water services procedures manual. Each of these records was reviewed and pertinent information was considered in the development of this feasibility study.

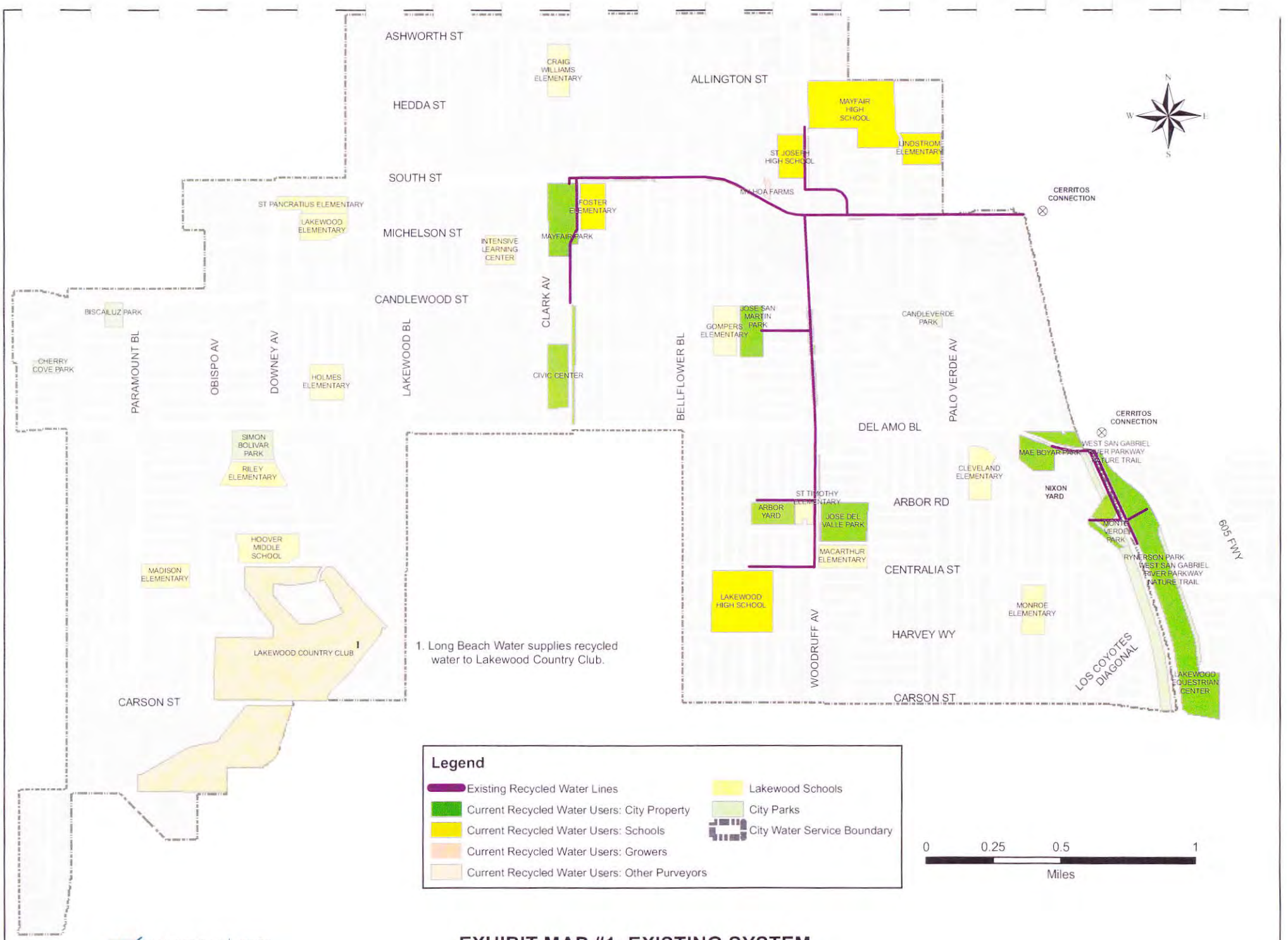

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EXHIBIT MAP #1: EXISTING SYSTEM
LAKEWOOD RECYCLED WATER SYSTEM

May 19, 2010

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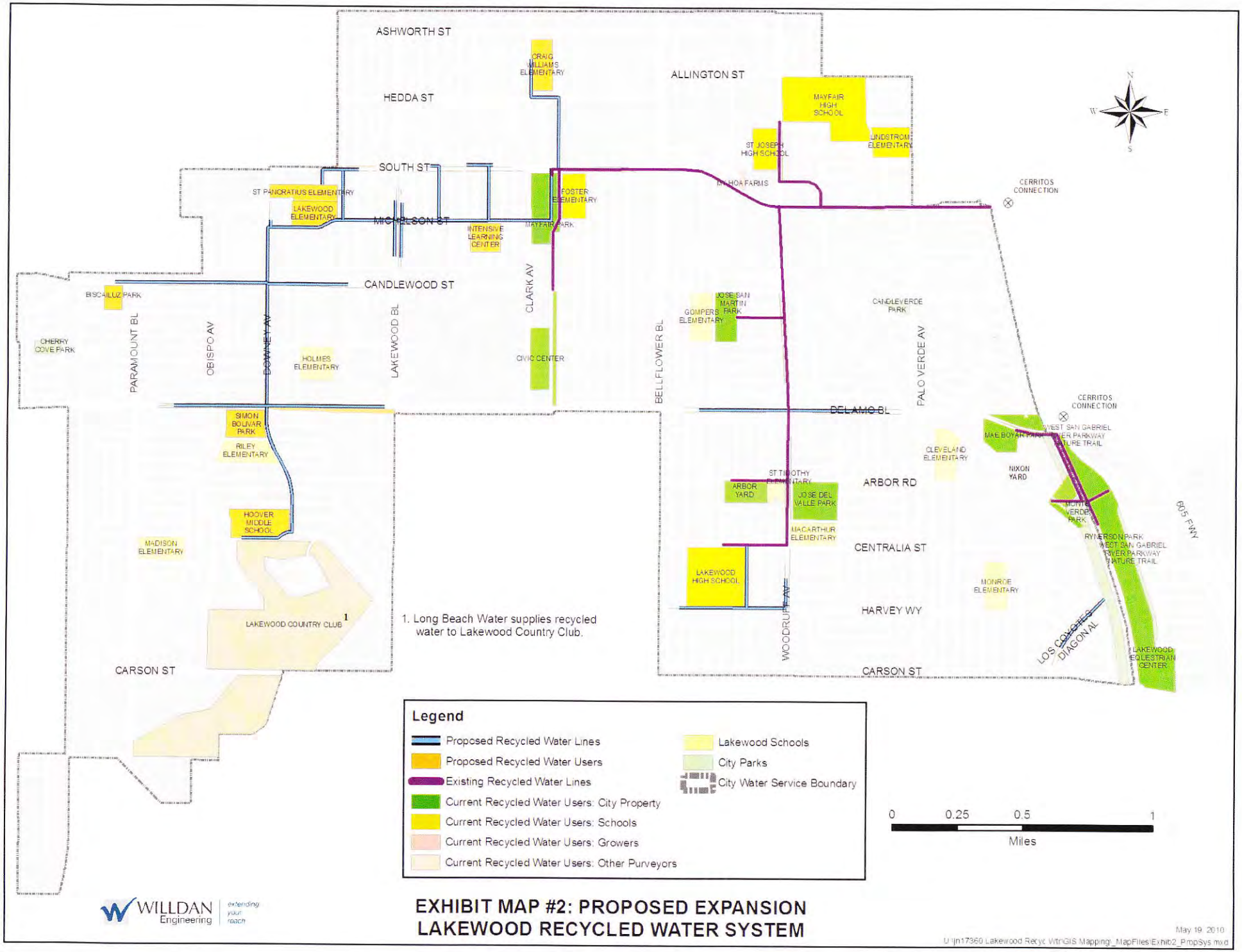

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EXHIBIT MAP #2: PROPOSED EXPANSION LAKEWOOD RECYCLED WATER SYSTEM

May 19, 2010

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A field inspection and discussion with Cam Castello of the Recreation and Community Services Department revealed that current site irrigation systems throughout the city are designed to operate hydraulically or electrically (remote control electric signals utilizing a 24 VAC solenoid). Also, each individual irrigation system is protected by a backflow prevention device consisting of either an atmospheric vacuum breaker (AVB) or reduced pressure (RP) type of device. These systems serve street parkway frontage and/or median islands, and open space areas such as parks and school sites. A majority of the irrigation systems appear to have been in operation 20 years or more, and the operating components and controllers do not have the efficiency features and capabilities that more recently available irrigation components now offer, especially for use with recycled water quality.

Related Water Needs, Service Groupings and Costs

Utilizing recent year's metered water consumption data for the various potential irrigation conversion sites; a spreadsheet table ranked from highest to lowest annual usage was prepared. This helped define phases of grouped service locations for maximum potable water savings as future distribution pipeline expansion is scheduled. The table also reflects the cumulative usage as an indicator used to guide phased groupings. The potential recycled water users spreadsheet tables are included in the appendix to this report.

For irrigated areas which could use recycled water in lieu of using potable water supplies, we have grouped those services areas into phases (each are described below). We started with the largest volume use groupings, based upon user adjacency to minimize costs to install the recycled water delivery system. For each location (phase) we have included all work within public rights-of-way necessary to construct main line facilities, laterals and new service meters to the water users delivery location. Each metered site is projected to have a new meter service and associated meter box for the service site. The engineer's opinion of construction cost, per phase, are included at the end of each phase description, and a map of the pipe alignments and related meter locations is included as exhibit map # 3 in the appendix.

On the customer's side of the meter all necessary and appropriate appurtenances such as pressure regulators, back flow preventers, irrigation controllers, valves, notification tags and markings associated with the use of recycled water are considered the responsibility of the customer/owner and are not included in the total costs to construct delivery pipelines to the related service connection point. Estimated costs per square-foot of irrigated area are included with the irrigation information in Appendix Section 6.

Phase 1 Description and Improvements

Main Line

Phase 1 improvements will provide recycled water service capability to the locations described in Table 1.1. These service sites are The Intensive Learning Center, Lakewood Elementary, St. Pancratius Elementary, the median in Lakewood Blvd., immediately north and south of Michelson Street, and the median in South Street between Hayter Ave. and Lakewood Blvd. Some of the main pipeline capacity size in this phase is necessary to facilitate further service into subsequent Phases 2, 3, 4 and part of 5. All of which are shown on Exhibit Map #3 in the Appendix.

To accomplish service to Phase 1 will involve upsizing the existing 6-inch pipeline that begins at the intersection of Fidler Avenue and South Street[1] and continues south to a tee at the intersection of Fidler Avenue and Bigelow Street and the existing 4-inch pipeline[2] that bears due west of the tee through Mayfair Park, over Los Cerritos Drainage Channel, to Clark Ave. Both pipelines must be upsized to a 10-inch recycled water main. The 10-inch pipeline will then be continued westerly in Michelson Street to its intersection with Hayter Avenue, then north in Hayter Avenue to its inter-section with South Street, then east and west in South Street to existing meter connections points as indicated on Exhibit Map #3. From the pipe cross at Hayter Avenue and Michelson Street, then west in Michelson Street to its intersection with Vedura Avenue, then north in Vedura Avenue to St. Pancratus Pl.

The future extension southerly in Hayter Avenue from the cross at Michelson Street, for phases 2 and 3 service, was selected to avoided Downey Ave. due to a greater number of utilities within the corridor and the higher traffic volume on that arterial.

Service Laterals

Phase 1 service connections include replacing the potable water delivery at each of the irrigation meter points described in Table 1.1, and as shown Exhibit Map #3. Due to the adjacency of six metered usage points near the Phase 1 main line, we have included them (meters 10, 34, 41, 52, 54 and 63) for the long term benefits of reduced potable water usage (7.26 acre-feet). The four median irrigation meters (10, 52, 54 and 63) are located on Lakewood Blvd., between Pepperwood Avenue and Camerino Street, and the two median irrigation meters (34 and 41) are located on South Street, east of Verdura Avenue.

Table 1.1 Phase 1 Service Locations

Potential User Ranking	Meter Location	Estimated R/W Usage (Acre-Feet)
1	Lakewood Elementary	19.68
5	Intensive Learning Center	9.41
9	St. Pancratius Elementary fields	5.03
10	Lakewood Blvd. Median North of Camerino St.	4.49

[1] Lakewood Recycled Water System – Phase 1 Record Drawings design date September 9, 1987.
[2] The existing 4-inch recycled water line bearing north in Clark Ave. shall remain in service

11	St. Pancratius Elementary	3.61
34	South St. Median North side at Castana Ave.	0.88
41	South St. Median South side at Castana Ave.	0.75
52	Lakewood Blvd. Median East side North of Camerino St.	0.52
54	Lakewood Blvd. Median North of Michelson St.	0.47
63	Lakewood Blvd. Median South of Pepperwood Ave.	0.15
	Total Phase 1 R/W Usage (Acre-Feet)	**44.99**
	% of All Considered Users	28%

Estimated Cost for Phase 1 Pipelines

Pipe Size (in)	Pipe Length (ft.)	Unit Cost ($)	Est. Const Cost	Engineering Costs	Contingency (20%)	Total Cost ($)
6" PVC	3,485	130	453050	67,958	90,610	611,618
10" PVC	5,080	135	685,800	102,870	137,160	925,830
						1,537,448

Phase 2 Description and Improvements

Main Line

Phase 2 improvements will provide recycled water service capability to the locations described in Table 2.1. These service sites are Bolivar Park, medians in Candlewood St. between Verdura Avenue and Oliva Avenue, medians in Downey Avenue from Del Amo Blvd to Eckleson Street, and the medians in Del Amo Blvd. from Allred / Silva Streets easterly to Lakewood Blvd. These locations are shown on Exhibit Map #3.

To accomplish service to Phase 2 will involve joining the Phase 1 main at the intersection of Camerino Street and Hayter Avenue, then continuing south in Hayter Avenue to its intersection with Del Amo Blvd., then west in Del Amo Blvd. and its frontage road, crossing over an open drainage channel, to its intersection with Downey Avenue. A second main extension within the north frontage road of Del Amo Blvd. between Downey Avenue and Allred / Silva Streets will be necessary to provide meter lateral services to the four (4) existing median irrigation meters along Del Amo Blvd. These alignments and service points are as identified on Exhibit #3.

Alternatively, an alignment for Phase 2 could have been westerly in Candlewood Avenue to its intersection with Downey Avenue, then southerly in Downey Ave. to Del Amo Blvd. This option would have involved some additional piping in Del Amo Blvd to reach metered locations 12 and 13, encountering a greater number of utilities within Downey

Avenue corridor, and incurred a greater traffic control impact due to construction within the higher volume secondary arterial; therefore, this alternative was not recommended.

Service Laterals

Phase 2 service connections include replacing potable water delivery to each of the irrigation meter points described in Table 2.1, and as shown Exhibit Map #3. All of these have been included for the long term benefits of reduced potable water usage, and collectively makeup the second largest potable irrigation water savings for the costs involved. The three median irrigation meters (37, 43 and 56) located on Downey Avenue, south from Candlewood Street, with a 1.96 acre-foot annual usage would have substantial service laterals cost with a limited benefit and therefore are not recommended as part of Phase 2.

Table 2.1 Phase 2 Service Locations

Potential User Ranking	Meter Location	Estimated R/W Usage (Acre-Feet)
2	Bolivar Park	15.15
12	Del Amo Blvd. Median at Minturn Ave	3.24
13	Del Amo Blvd. Median West of Lakewood Blvd	2.91
15	Del Amo Blvd. Median West of Obispo Ave	1.46
20	Candlewood St. Median West of Minturn Ave	1.14
22	Candlewood St. Median East of Minturn Ave	1.08
23	Del Amo Blvd. Median West of Downey Ave	1.08
25	Del Amo Blvd. Median South side West of Downey Ave	1.07
29	Del Amo Blvd. Median North side East of Silva St.	1.00
30	Candlewood St. Median East of Hayter Ave	0.94
47	Del Amo Blvd. Median South side East of Downey Ave.	0.61
53	Del Amo Blvd. Median North side west of Hayter St	0.51
55	Downey Ave. Median East side North of Del Amo Blvd.	0.47
	Total Phase 2 R/W Usage (Acre-Feet)	**30.66**
	% of All Considered Users	19%

Estimated Cost for Phase 2 Pipelines

Pipe Size	Pipe Length	Unit Cost	Est. Const	Engineering	Contingency	Total Cost

(in)	(ft.)	($)	Cost	Costs	(20%)	($)
6" PVC	1,850	130	240,500	36,075	48,100	324,675
8" PVC	1,000	132	132,000	19,800	26,400	178,200
10" PVC	5,185	135	699,975	104,996	139,995	944,966
						1,447,841

Phase 3 Description and Improvements

Main Line

Phase 3 improvements will provide recycled water service capability to the locations described in Table 3.1. These service sites include Craig Williams Elementary site, and the medians along South Street between Bonfair Avenue and Sunfield Avenue. These locations are shown on Exhibit Map #3.

To accomplish service to Phase 3 will involve joining the Phase 1 main at the intersection of Sunfield Ave. and Michelson Street, then continuing north in Sunfield Ave. to its intersection with Hedda Street, then easterly in Hedda Street to its intersection with Clark Avenue, then northerly in Clark Ave. to the existing irrigation meter service point for Craig Williams Elementary site. A second main pipe extension is within the north frontage road of South Street between Sunfield Ave and Bonfair Avenue, will be necessary to provide meter lateral services to the five (5) existing median irrigation meters along South Street. These alignments and service points are as identified on Exhibit #3.

Alternatively, an alignment for Phase 3 could have been westerly in South Street from its intersection at Fidler Avenue to Sunfield Avenue for extension to the north and west to the ending meter point on South Street near Bonfair Avenue. This alternative would involve slightly less pipeline length, but it would require construction in South Street (a major arterial) and its signalized intersection with Clark Avenue (another arterial street in the community). To avoid the added construction impacts of this alignment it was decided not to recommend this alternative.

Service Laterals

Phase 3 service connections include replacing potable water delivery to each of the irrigation meter points described in Table 3.1, and as shown Exhibit Map #3. All of these have been included for the long term benefits of reduced potable water usage, and collectively makeup the third largest potable irrigation water savings for the costs involved.

Table 3.1 Phase 3 Service Locations

Potential User Ranking	Meter Location	Estimated R/W Usage (Acre-Feet)
6	Craig Williams Elementary	7.83
7	South St. Median in front of 4505 South St	6.87
28	South St. Median next to 5745 Pennswood Ave	1.01
42	South St. Median next to 5744 Blackthorne Ave	0.75
45	South St. Median in front of 4915 South St	0.63
46	South St. Median in front of 4705 South St	0.62
	Total Phase 3 R/W Usage (Acre-Feet)	**17.71**
	% of All Considered Users	11%

Estimated Cost for Phase 3 Pipelines

Pipe Size (in)	Pipe Length (ft.)	Unit Cost ($)	Est. Const Cost	Engineering Costs	Contingency (20%)	Total Cost ($)
6" PVC	3,138	130	407,940	61,191	81,588	550,719
10" PVC	1,100	135	148,500	22,275	29,700	200,475
						751,194

Phase 4 Description and Improvements

Main Line

Phase 4 improvements will provide recycled water service capability to the metered locations described in Table 4.1. The service site is Herbert Hoover Middle School with meter service on Country Club Drive. This location is shown on Exhibit Map #3.

To accomplish service to Phase 4 will involve joining the Phase 2 main at the intersection of Del Amo Boulevard and Downey Avenue, then southerly in Downey Avenue to its intersection with County Club Drive, then westerly in Country Club Drive to the two existing irrigation meter locations.

Service Laterals

Phase 4 service connections include replacing the potable water delivery at each of the irrigation meter points described in Table 4.1. and as shown Exhibit Map #3. These have been included for the long term benefits of reduced potable water usage, and collectively makeup the fourth largest potable irrigation water savings for the costs involved.

Table 4.1 Phase 4 Service Locations

Potential User Ranking	Meter Location	Estimated R/W Usage (Acre-Feet)
3	Herbert Hoover Middle School	12.43
4	Herbert Hoover Middle School	12.13
	Total Phase 4 R/W Usage (Acre-Feet)	**24.56**
	% of All Considered Users	15%

Estimated Cost for Phase 4 Pipelines

Pipe Size (in)	Pipe Length (ft.)	Unit Cost ($)	Est. Const Cost	Engineering Costs	Contingency (20%)	Total Cost ($)
6" PVC	1,000	130	130,000	19,500	26,000	175,500
10" PVC	2,600	135	351,000	52,650	70,200	473,850
						649,350

Phase 5 Description and Improvements

Main Line

Phase 5 improvements will provide recycled water service capability to various locations as described in Table 5.1. The service sites consist of Biscailuz Park and seven separate median/parkway segments located on six different arterial streets within the community.

To accomplish service to all Phase 5 locations will involve joining previously installed recycled water pipelines at three separate locations. For service to the Biscailuz Park site a connection will be required at the intersection of Verdura Avenue and Michelson Street, then westerly in Michelson St., over the open drainage channel facility, to its intersection with Downey Avenue, then south in Downey Avenue to its intersection with Candlewood Street, then westerly in Candlewood St. and its frontage road to the existing irrigation meter service point for Biscailuz Park site. A second point of connection will be required at the intersection of Centralia Street and Woodruff Avenue, then continuing southerly in Woodruff Ave. to its intersection with Harvey Way, then westerly in Harvey Way to the westerly meter location between Briercrest Avenue and Marber Avenue. The third point of connection will be at the intersection of Woodruff Avenue and Del Amo Blvd. for added service in both directions along Del Amo Blvd. Service for the medians to the west will require pipeline extension from Woodruff Ave. to the meters near Coldbrook Avenue. Service for the medians to the east will require pipeline extension from

Woodruff Ave. to the meters near Canehill Avenue. A fourth point of connection will be at the intersection of Del Amo Blvd. and Lakewood Blvd., then branching northerly along Lakewood Blvd. to the meter north of Hardwick St., and easterly along Del Amo Blvd. to Clark Ave.

Alternatively, an alignment within Candlewood Street from its intersection with Hayter Avenue, then westerly to Downey Avenue involves slightly lesser pipe length, but greater impact to traffic flow in a higher traffic volume arterial, and crossing of an open drainage channel facility as well as through the intersection of Downey Avenue are the reasons this alignment was is not recommended.

Possible Future Addition:

Another somewhat isolated set of street medians that could be transitioned from use of potable water supply for irrigation to use of recycled water are those on Los Coyotes Diagonal between Stevely Avenue and Carson Street. According to metered usage from the five (5) meters along this segment, the annual average is 3.56 acre-feet of water demand. Service to this street segment may require extension of the recycled water pipeline serving Monte Verde Park site near Shadeway Road and Turnergrove Drive. If a pipeline extension is necessary from this location, it could require about 2,300 to 2,750 feet of new pipe, depending upon the available routing. However, if there is a recycled water pipeline with sufficient capacity within the adjacent L.A. Department of Water and Power easement abutting the westerly side of the San Gabriel River, the potential for service to the Los Coyotes Diagonal meters can be accomplished at a much lower cost.

Service Laterals

Phase 5 service connections include replacing potable water delivery to each of the irrigation meter points described in Table 5.1, and as shown Exhibit Map #3. All of these have been included for the long term benefits of reduced potable water usage, and collectively makeup the fifth largest potable irrigation water savings for the costs involved.

Table 5.1 Phase 5 Service Locations

Potential User Ranking	Meter Location	Estimated R/W Usage (Acre-Feet)
8	Biscailuz Park	5.15
14	Downey Ave. Median at Camarino St	1.64
16	Woodruff Ave. Median at Gallup St	1.32
17	Del Amo Blvd. Median at Coldbrook Ave	1.21
18	Del Amo Blvd. Median at Eastbrook Ave	1.19
19	Woodruff Ave. Median at Gallup St	1.16

24	Del Amo Blvd. Median East of Faust Ave	1.08
27	Del Amo Blvd. Median at Ocana Ave	1.03
31	Del Amo Blvd. Median East of Snowden Ave	0.94
32	Downey Ave. Median North of Michelson St	0.92
33	Harvey Way Median at Sebren Ave	0.88
36	Candlewood St. Median at Bixler Ave	0.82
38	Candlewood St. Median East of Daneland St	0.81
39	Del Amo Blvd. Median at Coldbrook Ave	0.80
40	Candlewood St. Median West of Downey Ave	0.79
44	Del Amo Blvd. Median at Canehill Ave	0.67
51	Harvey Way Median at Ocana Ave	0.53
57	Candlewood St. Median at Levelside Dr	0.42
58	Del Amo Blvd. Median East of Faust	0.42
59	Harvey Way Median East of Marber Ave	0.42
61	Harvey Way Median West of Woodruff Ave	0.33
64	Lakewood Blvd. Median North of Hardwick St.	6.74
65	Lakewood Blvd. Median at Silva St.	4.47
66	Del Amo Blvd. 95' East of Lakewood Blvd.	2.44
67	Del Amo Blvd. East of Lakewood Blvd.	1.24
68	Del Amo Blvd. East of Lakewood Blvd.	0.43
69	Del Amo Blvd. West of Clark Ave.	0.32
70	Del Amo Blvd. West of Clark Ave.	0.51
71	Del Amo Blvd. West of Clark Ave.	0.78
	Total Phase 5 R/W Usage (Acre-Feet)	**39.46**
	% of All Considered Users	25%

Estimated Cost for Phase 5 Pipelines

Pipe Size (in)	Pipe Length (ft.)	Unit Cost ($)	Est. Const Cost	Engineering Costs	Contingency (20%)	Total Cost ($)
6" PVC	10,100	130	1,313,000	196,950	262,600	1,772,550

8" PVC	4,800	132	633,600	95,040	126,720	855,360
10" PVC	1,300	135	175,500	26,325	35,100	236,925
						2,864,835

Availability of Additional Recycled Water

The City's Director of Water Resources is addressing this subject area with City of Cerritos representatives.

Funding Opportunities

The cost of expanding the recycled water system to reduce the use of potable water in existing irrigation systems within the community can be offset by application to the Metropolitan Water District (MWD) of Southern California under their Local Resources Program (LRP). This program provides annual financial incentives (per acre-foot of water replaced/developed over a 25-year term) as in this case for the direct replacement of potable water with recycled water. Applications for this program are being accepted, and a copy of the LRP application guidelines is included in the appendix or may also be downloaded from MWD's website at www.mwdh2o.com.

Should additional funding be required to accomplish the recycled water system expansion, there are various combinations of grants, loans, debt instruments, rates and fees that could also be considered and assembled for implementing this type of water conservation program.

Summary

Each of the Phase projects as identified herein, are constructible within existing public right-of-ways. The availability of funding for each Phase will need to be identified and evaluated, then scheduling for the design and construction established around the funding availability identified.

Current City rates and charges for potable water ($2.08/hcf) and for recycled water ($1.02/hcf) results in a $1.06/hcf ($461.74/acre-foot) pricing incentive for use of recycled water, where such is feasible under applicable City codes. Since the City has a tiered rate structure applicable to differing water availability conditions (water conservation related) in the region, the resulting cost savings will vary with the total monthly volume of water applied to irrigated areas. With the current cost differential, the use of recycled water will reduce irrigated water use costs while contributing to the necessary reduction in available potable water usage; thereby resulting in compliance with the 2009 statutes added to the Water Code relative to potable water use reductions per capita. Upon completion of all five phases described above, the added reduction in potable water use will total 159 acre-feet per year.

In conclusion, the conversion of potable water use to recycled water use, in existing and future irrigation systems throughout the City, is a positive step toward sustainable efforts to reuse this valuable alternative water source as available. Recycled water use in landscape irrigation effectively contributes to water conservation, and is a credit under the potable water use reduction as required under SB-7 (2009), now codified in State Water Code Section 10608.16.

Appendices Follow

APPENDICIES

1. Exhibit Map # 3 – Full Scale
   [Map shows the proposed Phased pipeline routing and related meter locations to be served]

2. Potential Recycled Water Users
   [Ranked from highest to lowest annual consumption volume]

3. MWD's Local Resources Program Application Guidelines
   [Guidelines for proposing on development of a water recycling project and application]

4. Statutory and Regulatory Factors
   [Past and recent statutes pertaining to recycled water use]

5. Irrigation Technology Improvements
   [Advances in irrigation technology resulting from climate, policy and marketplace]

6. Issues and Requirements pertinent to Irrigation Application
   [Factors for site application and connection using recycled water]

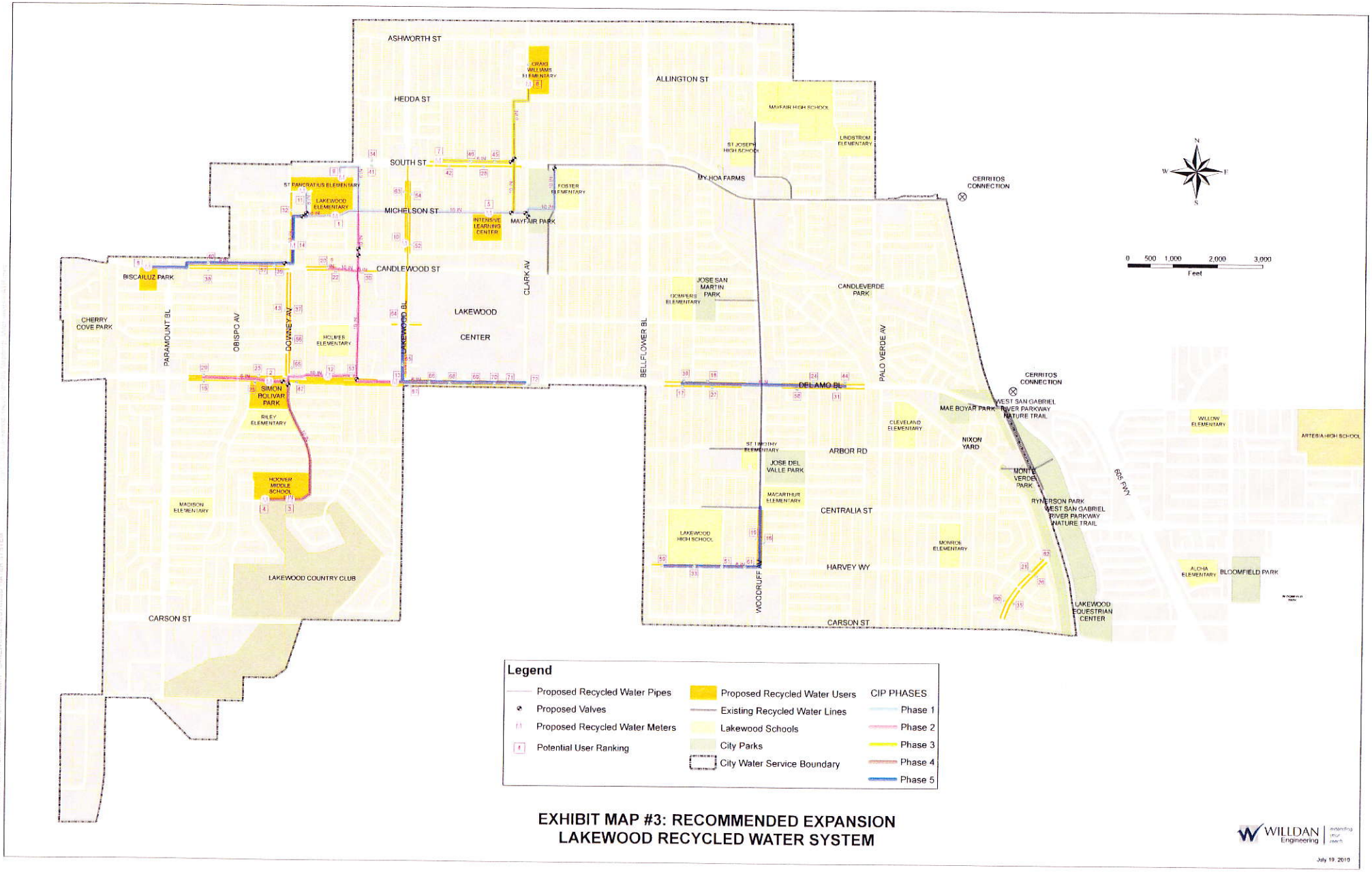

EXHIBIT MAP #3: RECOMMENDED EXPANSION LAKEWOOD RECYCLED WATER SYSTEM

WILLDAN Engineering

July 19, 2010

Potential Recycled Water Use

* Indicates a meter providing both irrigation and domestic water uses. To determine irrigation use we applied the city's assumed 75% factor against total flow. Detailed verification should be conducted before undertaking design.

Indicates Irrigation Meter

Indicates Parkway Meter

Indicates Domestic Meter

Indicates Unknown Amount of Domestic or Irrigation Percentage

Ranking	Service Site	Address	Meter Size	Additional Information	Total Usage (2.33 yrs) Mtr. Rec. (HCF)	Average Annual Usage (HCF/YR)	Estimated Irrigation Use (AF/YR)	Estimated Irrigation Use (HCF/YR)	Cumm Estimated Irrigation Usage (HCF/YR)	Usage Rank	% of Total	Cumm %
1	Lakewood Elementary*	3717 Michelson St.	4"		26630	11429	19.68	8572	8572	1	12%	12%
2	Bolivar Park*	3300 Del Amo Blvd.	3"		20503	8800	15.15	6600	15172	2	10%	22%
3	Hoover Junior H.S.	3501 Country Club Dr.	2"	Irrigation, meter by light pole, west end of school	12615	5414	12.43	5414	20586	3	8%	30%
4	Hoover Junior H.S.	3501 Country Club Dr.	2"	Irrigation, west meter	12313	5285	12.13	5285	25870	4	8%	37%
5	Intensive Learning Center*	4718 Michelson St.	3"		12728	5463	9.41	4097	29967	5	6%	43%
6	Craig Williams Elementary	6144 Clark Ave.	2"	Irrigation, meter by backflow device	7942	3409	7.83	3409	33376	6	5%	48%
7	South St. West of Clark Ave.	4505 South St.	2"	Across From 4505 South St., Irrigation North Side	6973	2993	6.87	2993	36369	7	4%	52%
8	Biscailuz Park*	2601 Dollar St.	3"		6973	2993	5.15	2245	38613	8	3%	56%
9	St. Pancratius Church/School*	5737 Coke Ave.	2"	Serves field	6808	2922	5.03	2191	40805	9	3%	59%
10	Lakewood Blvd. South of Michelson St.	Lakewood Blvd. 460' South of Michelson St.	1-1/2"	Across From 5443 Lakewood Blvd., Irrigation West Side	4560	1957	4.49	1957	42762	10	3%	62%
11	St. Pancratius Church/School*	3601 St. Pancratius Pl.	2"		4889	2098	3.61	1574	44335	11	2%	64%
12	Del Amo Blvd. East of Downey Ave.	Del Amo Blvd. at Minturn Ave., North Side	1-1/2"	North Side	3284	1409	3.24	1409	45745	12	2%	66%
13	Del Amo Blvd. East of Downey Ave.	Del Amo Blvd 103' West of Lakewood Blvd., South Side	1-1/2"	South Side	2952	1267	2.91	1267	47012	13	2%	68%
14	Downey Ave. South of Michelson St.	5426 Downey Ave.	1-1/2"	Across From 5424 Downey Ave.	1667	715	1.64	715	47727	14	1%	69%
15	Del Amo Blvd. West of Downey Ave.	Del Amo Blvd. 560' West of Obispo Ave., South Side	1-1/2"	Across From 2902 Del Amo Blvd. South Side	1484	637	1.46	637	48364	15	1%	70%
16	Woodruff Ave. South of Centralia St.	0 Woodruff Ave. 120' North of Gallup St., East Side	1-1/2"	East Side	1340	575	1.32	575	48939	16	1%	71%

Potential Recycled Water Use

* Indicates a meter providing both irrigation and domestic water uses. To determine irrigation use we applied the city's assumed 75% factor against total flow. Detailed verification should be conducted before undertaking design.

Indicates Irrigation Meter

Indicates Parkway Meter

Indicates Domestic Meter

Indicates Unknown Amount of Domestic or Irrigation Percentage

Ranking	Service Site	Address	Meter Size	Additional Information	Total Usage (2.33 yrs) Mtr. Rec. (HCF)	Average Annual Usage (HCF/YR)	Estimated Irrigation Use (AF/YR)	Estimated Irrigation Use (HCF/YR)	Cumm Estimated Irrigation Usage (HCF/YR)	Usage Rank	% of Total	Cumm %
17	Del Amo Blvd. West of Woodruff Ave.	Del Amo Blvd. at Coldbrook Ave., South Side	1-1/2"	South Side	1228	527	1.21	527	49466	17	1%	71%
18	Del Amo Blvd. West of Woodruff Ave.	0 Del Amo Blvd. 600' West of Silva St.	1-1/2"	North Side	1203	516	1.19	516	49983	18	1%	72%
19	Woodruff Ave. South of Centralia St.	Woodruff Ave. 620' South of Centralia St., West Side	1-1/2"	Irrigation West Side	1180	506	1.16	506	50489	19	1%	73%
20	Candlewood St. East of Downey Ave.	0 Candlewood St. 475' From Minturn, North Side	1-1/2"	Across From 3723 Candlewood St. North Side	1156	496	1.14	496	50985	20	1%	73%
21	Los Coyotes Diag.	Los Coyotes Diag., 425' North of Harvey Way	1-1/2"	Across From 4243 Los Coyotes Diag., Irrigation West Side	1135	487	1.12	487	51472	21	1%	74%
22	Candlewood St. East of Downey Ave.	0 Candlewood St. At Minturn Ave., South Side	1-1/2"	East of Minuturn Ave. South Side	1094	470	1.08	470	51942	22	1%	75%
23	Del Amo Blvd. West of Downey Ave.	0 Del Amo Blvd. 535' West of Downey Ave., North Side	1-1/2"	North Side	1094	470	1.08	470	52411	23	1%	76%
24	Del Amo Blvd. East of Woodruff Ave.	Del Amo Blvd.	1-1/2"	Across From 6037 Del Amo Blvd. North Side	1093	469	1.08	469	52880	24	1%	76%
25	Del Amo Blvd. West of Downey Ave.	0 Del Amo Blvd. 545' West of Downey Ave.	1-1/2"	Middle of Parkway Panel- Bolivar Park South Side	1086	466	1.07	466	53346	25	1%	77%
26	Los Coyotes Diag.	Los Coyotes Diag. 425' North of Harvey Way, East Side	1-1/2"	Across From 4236 Los Coyotes Diag. East Side	1056	453	1.04	453	53800	26	1%	78%
27	Del Amo Blvd. West of Woodruff Ave.	0 Del Amo Blvd. 80' West of Lomina Ave., South Side	1-1/2"	South Side	1041	447	1.03	447	54246	27	1%	78%
28	South St. West of Clark Ave.	5745 Pennswood Ave.	2"	Across From 5745 Pennswood Ave. on south St., Irrigation South Side	1025	440	1.01	440	54686	28	1%	79%
29	Del Amo Blvd. West of Downey Ave.	0 Del Amo Blvd.	1-1/2"	Across From 2903 Del Amo Blvd. North Side	1016	436	1.00	436	55122	29	1%	79%
30	Candlewood St. East of Downey Ave.	0 Candlewood St. at Hayter Ave.	1-1/2"	Next to Speed Limit Sign	956	410	0.94	410	55533	30	1%	80%
31	Del Amo Blvd. East of Woodruff Ave.	0 Del Amo Blvd.120' East of Snowden Ave., South Side	2"	South Side	950	408	0.94	408	55940	31	1%	81%
32	Downey Ave. North of Michelson St.	5630 Downey Ave.	1-1/2"	East Side	931	400	0.92	400	56340	32	1%	81%

Potential Recycled Water Use

* Indicates a meter providing both irrigation and domestic water uses. To determine irrigation use we applied the city's assumed 75% factor against total flow. Detailed verification should be conducted before undertaking design.

Indicates Irrigation Meter

Indicates Parkway Meter

Indicates Domestic Meter

Indicates Unknown Amount of Domestic or Irrigation Percentage

Ranking	Service Site	Address	Meter Size	Additional Information	Total Usage (2.33 yrs) Mtr. Rec. (HCF)	Average Annual Usage (HCF/YR)	Estimated Irrigation Use (AF/YR)	Estimated Irrigation Use (HCF/YR)	Cumm Estimated Irrigation Usage (HCF/YR)	Usage Rank	% of Total	Cumm %
33	Harvey Way West of Woodruff Ave.	999 Harvey Way at Sebren Ave.	1-1/2"	South Side	893	383	0.88	383	56723	33	1%	82%
34	South St. West of Clark Ave.	000 Castana Ave.	1-1/2"	Across from 5802 Castana Ave. North Side	889	382	0.88	382	57105	34	1%	82%
35	Los Coyotes Diag.	Los Coyotes Diag. 100' South of Harvey Way, East Side	1-1/2"	East Side	865	371	0.85	371	57476	35	1%	83%
36	Candlewood St. West of Downey Ave.	Candlewood St. 550' West of Downey Ave.	1-1/2"	North Side	830	356	0.82	356	57832	36	1%	83%
37	Downey Ave. South of Candlewood St.	0 downey Ave. 280' South of Candlewood St., East Side	1-1/2"	Across From 5158 Downey Ave. East Side	824	354	0.81	354	58186	37	1%	84%
38	Candlewood St. West of Downey Ave.	0 Candlewood 560'	1-1/2"	Across From 2852 Candlewood St. South Side	820	352	0.81	352	58538	38	1%	84%
39	Del Amo Blvd. West of Woodruff Ave.	Del Amo Blvd. at Coldbrook Ave., North Side	1-1/2"	North Side	811	348	0.80	348	58886	39	1%	85%
40	Candlewood St. West of Downey Ave.	Candlewood St. 575' West of Obispo Ave, North Side	1-1/2"	Across From 2853 Candlewood St. North Side	797	342	0.79	342	59228	40	0%	85%
41	South St. West of Clark Ave.	0 South St.	1-1/2"	South St. at Castana Ave. South Side	765	328	0.75	328	59556	41	0%	86%
42	South St. West of Clark Ave.	5744 Blackthorne Ave.	2"	Across From 5744 Blackthorne Ave. on South St., Irrigation South Side	761	327	0.75	327	59883	42	0%	86%
43	Downey Ave. South of Candlewood St.	0 Downey Ave.280' South of Candlewood St.	1-1/2"	In Front of 5157 Downey Ave. West Side	728	312	0.72	312	60195	43	0%	87%
44	Del Amo Blvd. East of Woodruff Ave.	Del Amo Blvd. 20' West of Canehil Ave., North Side	1-1/2"	North Side	683	293	0.67	293	60489	44	0%	87%
45	South St. West of Clark Ave.	4915 South St.	2"	Irrigation North Side	639	274	0.63	274	60763	45	0%	88%
46	South St. West of Clark Ave.	4705 South St.	2"	North Side	634	272	0.62	272	61035	46	0%	88%
47	Del Amo Blvd. East of Downey Ave.	0 R/W Del Amo Blvd. at Downey Ave.	1"	25' East of the Curb- Flood Control South Side	620	266	0.61	266	61301	47	0%	88%
48	Hoover Junior H.S.* Middle Meter	3501 Country Club Dr.	2"	Not locateable	792	340	0.00	0	61301	48	0%	88%

Potential Recycled Water Use

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Ranking	Service Site	Address	Meter Size	Additional Information	Total Usage (2.33 yrs) Mtr. Rec. (HCF)	Average Annual Usage (HCF/YR)	Estimated Irrigation Use (AF/YR)	Estimated Irrigation Use (HCF/YR)	Cumm Estimated Irrigation Usage (HCF/YR)	Usage Rank	% of Total	Cumm %
49	Hoover Junior H.S.* South Meter	3501 Country Club Dr.	2"	Not locateable	769	330	0.00	0	61301	49	0%	88%
50	Hoover Junior H.S.* North Meter	3501 Country Club Dr.	2"	Not locateable	757	325	0.00	0	61301	50	0%	88%
51	Harvey Way West of Woodruff Ave.	0 Harvey Way at Ocana Ave.	1-1/2"	South Side	537	230	0.53	230	61531	51	0%	89%
52	Lakewood Blvd. South of Michelson St.	5438 Lakewood Blvd.	2"	East Side	526	226	0.52	226	61757	52	0%	89%
53	Del Amo Blvd. East of Downey Ave.	Del Amo Blvd. at Hayter Ave.	1-1/2"	North Side	522	224	0.51	224	61981	53	0%	89%
54	Lakewood Blvd. North of Michelson St.	5634 Lakewood Blvd.	1-1/2"	Across From 5634 Lakewood Blvd. East Side	478	205	0.47	205	62186	54	0%	90%
55	Downey Ave. South of Candlewood St.	400' North of Del Amo Blvd.	1-1/2"	Across From 4936 Downey Ave. East Side	478	205	0.47	205	62392	55	0%	90%
56	Downey Ave. South of Candlewood St.	Downey Ave. 120' South of Hardwick St.	1-1/2"	Across from 5036 Downey Ave. East Side	440	189	0.43	189	62580	56	0%	90%
57	Candlewood St. West of Downey Ave.	Candlewood St. at Levelside Dr.	1-1/2"	South Side	427	183	0.42	183	62764	57	0%	90%
58	Del Amo Blvd. East of Woodruff Ave.	0 Del Amo Blvd. 170' East of Faust Ave.	1-1/2"	South Side	428	184	0.42	184	62947	58	0%	91%
59	Harvey Way West of Woodruff Ave.	0 Harvey Way 240' East of Marber Ave.	1-1/2"	South Side	424	182	0.42	182	63129	59	0%	91%
60	Los Coyotes Diag.	0 999 4171 Los Coyotes Diag.	1-1/2"	Across From 4171 Los Coyotes Diag. West Side	361	155	0.36	155	63284	60	0%	91%
61	Harvey Way West of Woodruff Ave.	0 Harvey Way	1-1/2"	South Side	335	144	0.33	144	63428	61	0%	91%
62	Los Coyotes Diag.	4273 Los Coyotes Diag.	1-1/2"	Across From 4273 Los Coyotes Diag. In Parkway Panel West Side	197	85	0.19	85	63513	62	0%	92%
63	Lakewood Blvd. North of Michelson St.	Lakewood Blvd. 335' North of Michelson St.	1"	West Side	152	65	0.15	65	63578	63	0%	92%
64*	Lakewood Blvd. North of Del Amo Blvd.	Lakewood and Hardwick in front of 5101 Lakewood Blvd	2"	West Side	7828	3914	6.74	2936	66513	N/A	4%	96%

Potential Recycled Water Use

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65*	Lakewood Blvd. North of Del Amo Blvd.	E FH in Prkwy across from 4949 Lakewood Blvd	2"	West Side	5197	2599	4.47	1949	68463	N/A	3%	99%
66*	Del Amo Blvd East of Lakewood Blvd	95' east of Lakewood Blvd	1-1/2"		2837	1419	2.44	1064	69527	N/A	2%	100%
67*	Del Amo Blvd East of Lakewood Blvd	Next to light pole 2nd FR Clark Del Amo 213' w/ Clark	1-1/2"		1442	721	1.24	541	70068	N/A	1%	101%
68*	Del Amo Blvd East of Lakewood Blvd	By backflow device east of Lakewood w/ corner	1-1/2"		502	251	0.43	188	70256	N/A	0%	101%
69*	Del Amo Blvd East of Lakewood Blvd	By Backflow device W/Cor E of Haz	1"		372	186	0.32	140	70395	N/A	0%	101%
70*	Del Amo Blvd East of Lakewood Blvd	By backflow W/FAC ACR FR Theatre-West of Faculty	1-1/2"		590	295	0.51	221	70617	N/A	0%	102%
71*		By Backflow Device	1-1/2"		679	340	0.78	340	70957	N/A	0%	102%
72*		At the intersection of Clark and Del Amo Blvd	UNK	No information provided on this meter	0	0	0.00	0	70957	N/A	0%	102%

Total Use (HCF) 69405

Total Use (Acre-Ft) 159.33

*INFORMATION FOR THESE METERS RECEIVED MAY 19, 2010 AND IS SUPPLIMENTAL TO THE DATA RANKED 1 THROUGH 63

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Executive Office

Date: July 31, 2007

To: Member Agency Managers

From: Stephen N. Arakawa, Manager, Water Resource Management

Subject: Local Resources Program Application Guidelines

The Metropolitan Water District of Southern California (Metropolitan) is currently seeking proposals for the development of water recycling and groundwater recovery projects under the Local Resources Program (LRP). New projects are needed to bolster our region's water supply reliability. The attached guidelines provide information about the program and application submittal. Funding is available to public and private water agencies for projects that are supported by Metropolitan's member agencies

In April 2007, Metropolitan's Board of Directors adopted updated administrative policy principles for LRP implementation. The new program employs an open process to accept and review project applications on a continuous basis for the development of 174,000 acre-feet per year of local resources. Previously, Metropolitan selected projects through a competitive request for proposal process.

We look forward to working with applicants, for further coordination or questions, contact Mr. Andy Hui at (213) 217-6557 or via email at ahui@mwdh2o.com

Stephen N. Arakawa

BE:tw
o:\a\sm\2007\BDE_LRP Application Package.doc

Attachments

cc: Board of Directors

700 N. Alameda Street, Los Angeles, California 90012 · Mailing Address: Box 54153, Los Angeles, California 90054-0153 · Telephone (213) 217-6000

The Metropolitan Water District of Southern California

Local Resources Program
Application Guidelines

INFORMATION FOR RESPONDENTS

The Metropolitan Water District of Southern California (Metropolitan) invites applications for development of water recycling and groundwater recovery projects under the Local Resources Program (LRP). This application package includes information regarding funding, eligibility and the application review process. Additional copies of the application package may be downloaded from Metropolitan's website at: www.mwdh2o.com. We look forward to working with all applicants to bolster our region's water supply reliability.

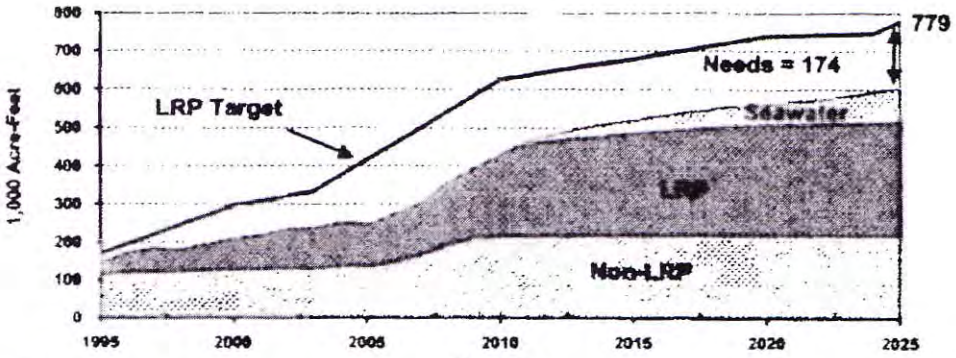
Objective

The LRP provides funding for the development of water recycling and groundwater recovery supplies that replace an existing demand or prevent a new demand on Metropolitan's imported water supplies either through:

- Direct replacement of potable water, or
- Increased regional groundwater production.

Metropolitan seeks development of 174,000 AFY of yield to meet a regional goal of 779,000 AFY by year 2025.

Current LRP Resource Needs *



* To be periodically updated

Application Submittals
Project applications will be accepted on an open and continuous basis until the target yield of 174,000 acre-feet per year is fully subscribed. Mail applications to:

The Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, California 90054-0153

Attention: Andy Hui
LRP Application Submittal

Contact for questions:

Mr. Andy Hui, Manager
Regional Supply Unit
The Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, California 90054-0153
Telephone: (213) 217-6557
Fax: (213) 217-6119
E-mail: ahui@mwdh2o.com

Who Can Apply
The LRP is open to public and private water utilities within Metropolitan's service area. Applications must be made through the applicant's respective Metropolitan member agency. Applicants are strongly encouraged to initiate early coordination with Metropolitan regarding proposed projects. Submittal of a LRP application does not signify or guarantee funding approval by Metropolitan.

Program Funding
Financial incentives between $0 and $250 per acre-foot produced over 25 year terms are recalculated annually based on eligible project costs incurred each year and Metropolitan's applicable water rates. Incentive commitments are contingent upon approval by Metropolitan's Board of Directors.

Prior to each fiscal year of operation, Metropolitan will set an estimated incentive rate payment for deliveries during the year. At the end of each fiscal year, Metropolitan will conduct a reconciliation to determine the actual incentive rate based on actual project costs and production data. At that time, over- or under-payment adjustments are made between Metropolitan and the project sponsor. The calculated incentive rate may diminish in future years as Metropolitan's water rates increase and each project's annual yield increases.

Targeted Projects
New and expansion of existing water recycling and groundwater recovery projects are eligible for funding provided they include construction of new substantive treatment or distribution facilities. Existing projects or those that have commenced construction prior to application submittal are ineligible. Strong consideration will be given to projects that are well positioned for construction and timely production of stated project capacities in the near future. Projects with long ramp-up schedules may be addressed in phased agreements, executed when each phase is poised for timely construction and operation. Agreements may be deferred or cancelled for projects not positioned to produce water in the near future.

Process Overview
Within four weeks after submittal of an application, Metropolitan will contact applicants if additional information is needed. Metropolitan will meet with applicants to ensure a complete understanding of the proposed project's objectives and benefits. After completion of project review and assessment,

agreement terms negotiations, and environmental documentation, the proposed project would be forwarded to Metropolitan's Board of Directors for funding consideration.

Metropolitan, at its sole discretion, may reject any and all applications and revise the terms of the LRP at any time.

Performance Provisions

Performance provisions will be included in all agreements to encourage timely and responsive project development and production. These provisions reduce or withdraw Metropolitan's financial commitment to projects that do not meet development and production milestones outlined in the following table.

Milestone	Timeline (full fiscal year)	Consequence if target is not achieved
Start construction	2 years after agreement execution	Terminate agreement*
Start operation	5 years after agreement execution	Terminate agreement*
50 percent of contract yield	4-7 years after agreement execution	Reduce ultimate yield by shortfall to meet target using the highest annual yield in the 4-year timeline period
75 percent of contract yield**	8-11 years after agreement execution	Same as above
75 percent of contract yield**	12-15 years and every four years thereafter	Same as above

* Applicants may appeal termination to Metropolitan's Board of Directors.

** Ultimate yield or revised ultimate yield specified in the incentive contract due to project's performance in previous years (if applicable)

Application Options

A written application outlined in the following pages must be submitted to Metropolitan to start the process. Metropolitan will accept applications/reports developed by the project sponsor for other purposes (e.g., applications for state funding programs, US Bureau of Reclamation feasibility report submittals, etc.) as long as they provide needed information. All applications must include an executive summary that identifies the location of the needed information. Failure to provide an executive summary may extend the review process. After an initial review, Metropolitan will meet with each applicant to ensure an accurate understanding of project features and LRP terms.

Local Resources Program
Application Guidelines

Applicants are requested to provide an application package with the following information, which will be used to review project eligibility for LRP funding. Each project application is unique and therefore may require more information.

1) **Project Overview**
   - Location
   - Source of supply and yield
   - Participating agencies and contractual commitments
   - Complete Attachment A

2) **Project Features**
   - Treatment process and quality objectives
   - Storage features
   - List and map distinguishing existing from proposed facilities, land acquisition, etc.
   - Interties to existing LRP agreements
   - Interties and points of connection to other non-project facilities
   - Methodology to measure project yield, e.g. metering, basin adjudication or watermaster rules if applicable

   Additional information for groundwater projects:
   - Basin hydrology and setting
   - Existing groundwater production and increase as a result of project
   - Imported water replenishment requirements
   - Previously abandoned production and/or replenishment
   - Basin adjudication or operating rules
   - Ability to sustain project production during 3-year period without receiving Metropolitan's replenishment
   - Compliance with sound basin management

3) **Project Cost**
   - Capital
   - Operation and Maintenance
   - Labor
   - Complete Attachment B

4) **Benefits**
   - Regional and local water supply reliability benefits
   - Peaking and seasonal variability
   - Local water supply benefits
   - Other benefits (environmental, water quality, energy, wastewater, avoided facilities and permits, etc.)

5) **Environmental Documentation and Permitting**
   - California Environmental Quality Act
   - Regulatory approvals and permits secured
   - Schedule for unsecured approvals and permits
   - Water Reclamation Requirements established by Regional Water Quality Control Board
   - Department of Health Services drinking water requirements

6) **User Identification**

Recycled Water Projects:

Existing recycled water user names, demand and type of use
Proposed user names, demand projections and type of usage including groundwater recharge
Location map of existing and proposed users
Deliveries outside of service area or non-project users
Mandatory use ordinances
Commitment letters
Growth expectations

Groundwater Projects:

Describe how implementation of the project will increase historical groundwater production
Describe how and where project water is used

7) **Implementation Schedule and Financing**

Governing board approvals
Status of design
Construction and operation timelines and milestones
Yield development (amount by year), type of use, and completion date for each phase
Implementation obstacles/challenges
Land acquisition
Financing sources and terms
Grants and third-party payments

ATTACHMENT A
LOCAL PROJECTS PROGRAM
PROJECT FACT SHEET

1.	**Project Name:**	
2.	**Project Location (City, County):**	
3.	**Project Owner (Applicant) Contact Information:**	
4.	**Metropolitan Member Agency:**	
5.	**Source of Project Water:**	
6.	**Type of Uses:**	
7.	**Estimated First Year of Operation:**	
8.	**Ultimate Annual Project Yield (AFY):**	

9. Other agencies / Entities participating in the project:

Agency / Entity	Role
a. _____	a. _____
b. _____	b. _____
c.	c.

10. Status of CEQA Documentation:

☐ Exempt Declaration ☐ Negative

☐ Mitigated Negative Declaration ☐ EIR/S

Status:

ATTACHMENT B
PROJECT COST AND YIELD INFORMATION

Total Project Capital Cost:	

Capital Funding Measures			
Source of Funding	Amount ($)	Interest Rate (%)	Term (years)

Assumed annual inflation rate for O&M cost projections: ____%

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
No.	Fiscal Year End	Yield (AF)	Schedule of Capital Expenditures ($)	Amortized Capital Payments ($)	Cost of Acquiring Water ($)	O&M Cost ($)	Total Project Cost ($)
1							
2							
3							
4							
5							
24							
25							

(1) July 1 to June 30
(2) Projected annual production in acre-feet, excluding existing use
(3) Capital expenditure in each year, identify funding source from table above
(4) Total annual capital debt service
(5) Applicable only if the project sponsor will purchase recycled water from another agency to operate the projects, groundwater basin pumping tax, etc.
(6) Projected annual O&M cost, excludes item 5
(7) Sum of (4) + (5) + (6)

4. Statutory and Regulatory Factors

The California Water Code contains numerous provisions relative to the use of reclaimed (recycled) water, and the conservation of water, since water is classed as a public resource. Sections and excerpts from the Water Code that are applicable to the use of recycled water and the conservation of potable water supplies within the City of Lakewood are as follows:

1. The Water Recycling Act of 1991 as contained in Water Code Sections 13575 through 13583.
2. Water Code Section 10608 contains the following language:
   (a) Water is a public resource that the California Constitution protects against waste and unreasonable use.
   (g) The Governor has called for a 20 percent per capita reduction in urban water use statewide by 2020.
3. Water Code Section 10608.4. contains the following language:
   (a) Require all water suppliers to increase the efficiency of use of this essential resource.
   (b) Establish a framework to meet the state targets for urban water conservation identified in this part and called for by the Governor.
4. Water Code Section 10608.16 contains the following language:
   (a) The state shall achieve a 20-percent reduction in urban per capita water use in California on or before December 31, 2020.
   (b) The state shall make incremental progress towards the state target specified in subdivision (a) by reducing urban per capita water use by at least 10 percent on or before December 31, 2015.
5. Water Code Section 13551 states the following language:
   A person or public agency, including a state agency, city, county, city and county, district, or any other political subdivision of the state, shall not use water from any source of quality suitable for potable domestic use for non-potable uses, including cemeteries, golf courses, parks, highway landscaped areas, and industrial and irrigation uses if suitable recycled water is available as provided in Section 13550; however, any use of recycled water in lieu of water suitable for potable domestic use shall, to the extent of the recycled water so used, be deemed to constitute a reasonable beneficial use of that water and the use of recycled water shall not cause any loss or diminution of any existing water right.

The Lakewood Municipal Code (LMC) also contains many provisions relative to the use of reclaimed (recycled) water, and the conservation of water, especially relative to use in landscaped areas within the City. Provisions of the LMC that pertain to use of reclaimed water are found in Section 5600, and provisions that pertain to water conservation in landscaping are found in Section 8600.

5. Irrigation Technology Improvements

In the area of technological and irrigation system efficiency, both equipment and methods have advanced due to water allocation restrictions set forth by state, regional and local water purveyors. Because of these water restrictions, the landscape industry responded by developing water-wise irrigation components which effectively reduce the amount of water waste in irrigated landscape. Advancements in irrigation technology include weather-based "smart" irrigation controllers, rain detection and shut-off devices, soil moisture monitors, low-flow drip line distribution, automatic high flow shut-off valves, micro sprays and precise flow adjustment in the sprinkler riser.

Essentially, these advancements provide basic efficiencies such as: placing water directly to the root zone with minimal effort, eliminate overspray, irrigate only when soil moisture falls below acceptable levels for proper plant growth, shut down irrigation systems when natural precipitation occurs, and flow disablers when there is a pipe breakage in the system. Such evolving improvements offer further future opportunities for effective water conservation and irrigation water usage.

6. Issues and Requirements pertinent to Irrigation Application

Based on our field inspection, the following tasks are typical topics that need to be properly addressed when converting landscape irrigation from potable water use to recycled water use. The Lakewood City Code also contains provisions in Section 5600 relative to use of recycled water, and in Section 8600 relative to water conservation in landscape irrigation uses. Additionally, the range of cost associated with converting existing irrigation site facilities is between $0.75 and $1.25 per square-foot of irrigated area, depending upon the density and condition of the existing system.

(A) Current Issues common to the use of Recycled Water in landscape irrigation that must be addressed prior to conversion from Potable Water use.

- Cross Contamination and Clearances – The required distances between water lines (both horizontally and vertically) will need field verification to ensure that safe distances between recycled and potable water lines exist. Additionally, existing underground utilities, other than water lines, could conflict and require additional effort to relocate in order to meet governing agency clearance requirements.

- Public Facilities – Newly designed irrigation systems as well as existing irrigation systems must be evaluated to ensure overspray does not occur on any public site amenity such as a picnic table, bench, playground equipment or other objects where the public has close contact. Further, overspray onto public facilities should be non-existent due to the damaging effects recycled water chemistry can have on said facilities.

- Plant Material – In some incidents, trees, shrubs and groundcover species commonly specified/installed in this geographic region experience negative affects when recycled

water is used for landscape irrigation. Some plantings cannot tolerate recycled water with its higher levels of chlorine and salts commonly resulting from water treatment that produces recycled water. Inspection and evaluation of current and proposed sites receiving irrigation with recycled water should be performed to assure proper selection of plant materials suitable for irrigation with the quality of recycled water.

- Mixed Use Point of Connections – Some sites, specifically schools/institutional facilities have one metered connection point that serves the building facilities as well as the landscape irrigation areas with potable water. For this reason, significant modifications to the aforementioned points of connection will be necessary to provide separated (clearance) between the remaining potable water service and the recycled water service for the irrigated areas.

(B) Irrigation System Components

- Point of Connection – The existing potable water meter for landscape irrigation use will need to be replaced with a reclaimed water meter. Additionally, each new reclaimed water meter shall be accompanied with a pressure regulator and basket strainer. The basket strainer is required for screening foreign matter and solids commonly found in post filtration recycled water processing. Note: A backflow prevention device is not necessary unless required by the water purveyor.

- Remote Control Valves – Existing irrigation control valves will need to be replaced with scrubber type valves which are engineered to operate with recycled water. The operating components within the scrubber type valves are resistant to foreign matter and solids that otherwise would degrade components in the existing potable water valves.

- Irrigation Pipe - Mainline and Lateral – Existing irrigation lines can remain as is. However, all new systems installed shall utilize the appropriate purple colored pipe (for reclaimed water use) throughout the system.

(C) Visual Notification of Recycled Water Use

- Warning Signage – Each specific irrigated site will require warning signs alerting the public of recycled water use on the site. The location of signs is typically at major pedestrian entry points; and along roadways to alert the public that recycled water is being used to irrigate the respective areas.

- Remote Control Valve Box Covers – Existing remote control, shut off and quick coupler valve box covers must be replaced with "purple" colored covers indicating recycled water in use. Additionally, all remote control, shut-off and quick coupler valves must be tagged indicating recycled water in use.

- Irrigation Heads – All irrigation sprinkler heads must have purple colored caps attached to them to indicate recycled water is in use.

- Exposed Irrigation Equipment – Any irrigation equipment that is in direct view of the public must be colored (painted) "purple" to indicate recycled water in use.

HISTORICAL AMOUNTS OF REPLENISHMENT WATER

(in acre-feet)

WATER YEAR	MONTEBELLO FOREBAY SPREADING WATER					INJECTION WATER*			IN-LIEU	TOTAL
	IMPORTED WATER	RECYCLED WATER	LOCAL WATER	MAKEUP WATER	TOTAL	IMPORTED WATER	RECYCLED WATER	TOTAL	TOTAL	
1959-60	80,900	-	20,064	-	100,964	3,700	-	3,700		104,664
1960-61	147,800	-	9,118	-	156,918	4,420	-	4,420		161,338
1961-62	208,122	1,178	39,548	-	248,848	4,460	-	4,460		253,308
1962-63	80,590	12,405	14,565	-	107,560	4,150	-	4,150		111,710
1963-64	104,900	13,258	9,992	-	128,150	10,450	-	10,450		138,600
1964-65	160,170	14,528	13,097	-	187,795	35,980	-	35,980		223,775
1965-66	121,700	15,056	45,754	6,500	189,010	48,110	-	48,110	745	237,865
1966-67	84,300	16,223	59,820	-	160,343	46,940	-	46,940	851	208,134
1967-68	95,400	18,275	39,760	-	153,435	44,530	-	44,530	850	198,815
1968-69	17,800	13,877	119,395	-	151,072	41,680	-	41,680	850	193,602
1969-70	68,900	17,158	52,917	-	138,975	33,940	-	33,940	900	173,815
1970-71	72,100	22,726	44,757	-	139,583	36,202	-	36,202	881	176,666
1971-72	34,400	21,999	17,688	-	74,087	41,036	-	41,036	756	115,879
1972-73	71,947	27,886	45,077	20,000	164,910	41,803	-	41,803	901	207,614
1973-74	68,237	23,452	29,171	23,921	144,781	42,658	-	42,658	901	188,340
1974-75	71,900	26,791	29,665	-	128,356	36,746	-	36,746	400	165,502
1975-76	50,800	27,687	22,073	-	100,560	44,815	-	44,815	400	145,775
1976-77	9,300	29,359	19,252	21,400	79,311	49,315	-	49,315	400	129,026
1977-78	39,900	25,722	147,317	7,800	220,739	40,231	-	40,231	16,131	277,101
1978-79	65,300	28,860	68,859	-	163,019	34,498	-	34,498	18,378	215,895
1979-80	10,200	29,406	106,820	10,900	157,326	37,235	-	37,235	14,961	209,522
1980-81	32,000	31,722	50,590	31,500	145,812	34,364	-	34,364	23,823	203,999
1981-82	4,600	34,052	47,930	30,900	117,482	34,294	-	34,294	18,883	170,659
1982-83	2,000	22,770	126,076	8,900	159,746	45,183	-	45,183	19,752	224,681
1983-84	1,500	32,241	60,710	20,800	115,251	39,482	-	39,482	41,740	196,473
1984-85	40,600	31,378	39,099	-	111,077	37,526	-	37,526	36,840	185,443
1985-86	21,500	29,279	66,966	-	117,745	31,693	-	31,693	26,132	175,570
1986-87	49,200	37,976	27,613	6,500	121,289	39,184	-	39,184	29,202	189,675
1987-88	23,300	43,349	50,068	5,800	122,517	37,483	-	37,483	28,411	188,411
1988-89	50,300	49,773	17,096	6,500	123,669	34,033	-	34,033	25,425	183,127
1989-90	52,700	50,109	9,388	13,600	125,797	32,054	-	32,054	29,151	187,002
1990-91	56,300	53,864	35,717	100	145,981	29,690	-	29,690	22,039	197,710
1991-92	43,100	46,903	136,357	-	226,360	34,798	-	34,798	19,104	280,262
1992-93	16,561	48,864	147,699	-	213,124	31,341	-	31,341	53,306	297,771
1993-94	20,411	53,981	55,896	-	130,288	25,109	-	25,109	109,581	264,978
1994-95	21,837	33,300	100,578	-	155,715	22,999	1,480	24,479	50,898	231,092
1995-96	18,012	53,862	62,920	-	134,794	23,304	4,170	27,473	51,333	213,600
1996-97	22,738	49,959	58,262	-	130,959	22,862	6,241	29,103	39,394	199,456
1997-98	952	37,017	96,706	-	134,675	17,125	8,306	25,431	30,330	190,436
1998-99	-	47,201	32,013	-	79,214	20,308	6,973	27,280	23,516	130,010
1999-00	45,037	43,270	20,607	-	108,914	22,917	7,460	30,377	22,278	161,569
2000-01	23,451	46,343	39,725	-	109,519	23,585	6,838	30,423	21,181	161,123
2001-02	42,875	60,596	17,000	-	120,471	24,376	7,276	31,652	20,720	172,843
2002-03	22,366	42,796	58,202	-	123,364	23,117	6,192	29,309	11,205	163,878
2003-04	27,520	44,925	30,467	-	102,912	21,361	3,669	25,030	-	127,942
2004-05	25,296	29,503	148,674	-	203,473	17,660	3,920	21,580	7,804	232,857
2005-06	33,229	42,022	60,377	-	135,628	14,628	6,874	21,502	9,889	167,019
2006-07	40,214	45,039	11,495	-	96,748	11,994	13,077	25,071	9,264	131,083
2007-08	1,510	39,767	54,518	-	95,795	12,880	15,165	28,045	-	123,840
2008-09	-	39,611	35,348	-	74,959	17,391	10,658	28,049	-	103,008
2009-10	26,286	55,731	35,398	-	117,415	18,411	11,902	30,313	-	147,728
2010-11	37,315	37,131	113,295	-	187,741	14,001	12,160	26,161	6,724	220,626
2011-12	-	55,797	36,155	-	91,952	10,896	8,990	19,886	7,815	119,653
2012-13	-	59,145	6,048	-	65,193	15,852	11,777	27,630	2,180	95,002
2013-14	-	55,646	-	-	55,646	16,074	17,778	33,852	4,371	93,868
TOTAL	**2,467,375**	**1,870,764**	**2,843,703**	**215,121**	**7,396,963**	**1,540,873**	**170,905**	**1,711,778**	**860,598**	**9,969,339**

** - Including Orange County sidc of Alamitos Barrier*

HISTORICAL AMOUNTS OF GROUNDWATER PRODUCTION*

(in acre-feet)

WATER YEAR	CENTRAL BASIN	WEST COAST BASIN	TOTAL
1959-60	245,400	66,600	312,000
1960-61	292,500	61,900	354,400
1961-62	275,800	59,100	334,900
1962-63	225,400	59,100	284,500
1963-64	219,100	61,300	280,400
1964-65	211,600	59,800	271,400
1965-66	222,800	60,800	283,600
1966-67	206,700	62,300	269,000
1967-68	220,100	61,600	281,700
1968-69	213,800	61,600	275,400
1969-70	222,200	62,600	284,800
1970-71	211,600	60,900	272,500
1971-72	216,100	64,800	280,900
1972-73	205,600	60,300	265,900
1973-74	211,300	55,000	266,300
1974-75	213,100	56,700	269,800
1975-76	215,300	59,400	274,700
1976-77	211,500	59,800	271,300
1977-78	196,600	58,300	254,900
1978-79	207,000	58,000	265,000
1979-80	209,500	57,100	266,600
1980-81	211,915	57,711	269,626
1981-82	202,587	61,874	264,461
1982-83	194,548	57,542	252,090
1983-84	196,660	51,930	248,590
1984-85	193,085	52,746	245,831
1985-86	195,972	53,362	249,334
1986-87	196,660	48,026	244,686
1987-88	194,704	43,837	238,541
1988-89	200,207	44,323	244,530
1989-90	197,621	48,047	245,668
1990-91	187,040	53,660	240,700
1991-92	196,400	56,318	252,718
1992-93	150,495	40,241	190,736
1993-94	156,565	41,826	198,392
1994-95	180,269	41,729	221,998
1995-96	182,413	52,222	234,636
1996-97	187,561	52,576	240,137
1997-98	188,305	51,859	240,164
1998-99	204,441	51,926	256,367
1999-00	198,483	53,599	252,082
2000-01	195,361	53,870	249,231
2001-02	200,168	50,063	250,231
2002-03	190,268	51,946	242,214
2003-04	200,365	48,013	248,378
2004-05	188,783	41,297	230,079
2005-06	191,123	36,808	227,931
2006-07	198,249	37,659	235,908
2007-08	206,297	38,472	244,768
2008-09	197,663	45,538	243,201
2009-10	197,390	44,013	241,403
2010-11	170,630	44,480	215,109
2011-12	195,820	45,597	241,417
2012-13	196,414	42,263	238,678
2013-14	198,585	42,520	241,105
TOTAL	**11,196,046**	**2,904,893**	**14,100,939**

* Numbers sometimes updated when pumping adjustments are required

HISTORICAL AMOUNTS OF WATER USE IN THE WRD SERVICE AREA*

(in acre-feet)

WATER YEAR	GROUNDWATER PRODUCTION	IMPORTED WATER FOR DIRECT USE*	RECLAIMED WATER FOR DIRECT USE*	TOTAL
1960-61	312,000	196,800		508,800
1961-62	334,900	178,784		513,684
1962-63	284,500	222,131		506,631
1963-64	280,400	257,725		538,125
1964-65	271,400	313,766		585,166
1965-66	283,600	308,043		591,643
1966-67	269,000	352,787		621,787
1967-68	281,700	374,526		656,226
1968-69	275,400	365,528		640,928
1969-70	284,800	398,149		682,949
1970-71	272,500	397,122		669,622
1971-72	280,900	428,713		709,613
1972-73	265,900	400,785		666,685
1973-74	266,300	410,546		676,846
1974-75	269,800	380,228		650,028
1975-76	274,700	404,958		679,658
1976-77	271,300	355,896		627,196
1977-78	254,900	373,116		628,016
1978-79	265,000	380,101	100 [(a)]	645,201
1979-80	266,600	397,213	200	664,013
1980-81	269,626	294,730	300	564,656
1981-82	264,461	391,734	300	656,495
1982-83	252,090	408,543	400	661,033
1983-84	248,590	441,151	1,800	691,541
1984-85	245,831	451,549	2,000	699,380
1985-86	249,334	427,860	2,400	679,594
1986-87	244,686	478,744	2,300	725,730
1987-88	238,541	479,318	3,500	721,359
1988-89	244,530	466,166	5,300	715,996
1989-90	245,668	448,285	5,900	699,853
1990-91	240,700	485,109	5,000	730,809
1991-92	252,718	395,191	4,900	652,809
1992-93	190,736	388,949	824	580,509
1993-94	198,392	483,287	3,413	685,092
1994-95	221,998	437,191	6,143	665,332
1995-96	234,636	426,699	19,804	681,139
1996-97	240,137	436,569	25,046	701,752
1997-98	240,164	375,738	27,075	642,976
1998-99	256,367	396,655	30,510	683,532
1999-00	252,082	395,681	33,589	681,352
2000-01	249,231	395,024	32,589	676,845
2001-02	250,231	395,799	38,694	684,723
2002-03	242,214	381,148	38,839	662,202
2003-04	248,378	389,233	36,626	674,237
2004-05	230,079	402,660	33,988	666,727
2005-06	227,931	366,815	35,301	630,047
2006-07	235,908	376,492	41,899	654,299
2007-08	244,768	346,035	45,120	635,923
2008-09	243,201	320,711	43,153	607,065
2009-10	241,403	278,857	43,547	563,808
2010-11	215,109	286,448	39,418	540,975
2011-12	241,417	282,746	42,138	566,301
2012-13	238,678	304,325	45,377	588,380
2013-14	241,105	304,501	55,311	600,917
TOTAL	13,746,539	20,236,861	752,805	34,736,204

(a) Los Coyotes on-line in 1979; Long Beach on-line in 1980

** - Includes imported & recycled at seawater barriers, but not spreading grounds.*

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Emergency Public Notification Plan

INTRODUCTION

The City of Lakewood Department of Water Resources delivers water that meets all existing State and Federal drinking water standards. However, in emergency situations such as an earthquake, a breach in the integrity of the water may occur due to damaged water lines, pumping facilities and/or reservoirs.

During the first critical hours following a disaster, department personnel will survey the system for damage. The system pressure and chlorine residual will be closely monitored during this time to determine the existence of contaminants in the water supply.

If a drop in system pressure occurs potentially breaching the integrity of the water supply, the Water DOC will initiate the public notification plan. Personnel shall base the extent of the public notification and the communication mechanisms used to inform the public based on the following criteria:

- **The magnitude of the emergency.** Is the entire service area affected? Is the disaster affecting the region or a small section of Los Angeles County?

- **The extent of the water contamination.** Is the problem confined to a small segment of the City's customers or is it throughout the system?

- **The manpower available to communicate the problem.** Are personnel engaged in other disaster response activities limiting their availability to assist with public notification?

- **DPH Instructions.** Has the department received directions from the State Department of Public Health?

The following information shall serve as a guideline for the notification of the public regarding the quality of the water.

DETERMINATION FOR PUBLIC NOTIFICATION

The following list includes potential triggers for the implementation of a public notification program:

- **Wastewater Discharge into Drinking Water.** Discharge of wastewater into the drinking water supply;

- **System Pressure Drops Below 20 psi.** Loss in system pressure 20 psi, which raises the risk of back siphoning into the water supply;

- **Treatment Process Failure.** Failure of treatment mechanism to the water supply;

- **Confirmed Contamination.** Confirmed analytical evidence of microbiological contamination of the water supply.

Department of Water Resources personnel must insure the completion of the following tasks before implementing the public notification program;

- **Cause Loss of System Pressure.** Determine the cause of loss system pressure by surveying production facilities and the distribution system.

- **Measures to Reduce Water Supply Losses.** Take appropriate action to reduce loss of water supply. Shut down appropriate production facilities and/or close distribution system valves. Log each valve closure on the **EMERGENCY VALVE CLOSURE LOG**.

- **Determine Type of Possible Contamination.** Define the type of potential contamination and identify the source.

- **Determine the affected area.**

- **Select Sampling Locations.** Select appropriate sampling locations to determine extent of potential contamination. Sampling sites should be up and downstream of any breach in the water system's integrity.

- **Draw Samples.** Draw water samples and deliver to the City's contract laboratory:

TRUSDAIL LABORATORIES, INC.
14201 Franklin Ave.
Tustin, CA 92780-7008
Daytime Telephone: 714.730.6239
FAX Number: 714.730.6462

After Hours Emergency Calls:

Lakewood Sheriff's Station
Watch Commander
5130 N. Clark Avenue
Lakewood, CA 90712
Telephone: 562.623.3500

Los Angeles County Fire Department
Angel Montoya, Assistant Fire Chief
Fire Station No. 30
19030 Pioneer Boulevard
Cerritos, CA 90701
Telephone: 562.860.5524
FAX: 562.925.3865

Agency Notification. Notify the following persons/ agencies before implementing the public notification program:

State Department of Public Health
500 N. Central Avenue, Suite 500
Glendale, CA 91203
Telephone Number: 818.551.2008
FAX Number: 818.551.2054

The State Department of Health Services will issue instruction for public notification based on the City of Lakewood Department of Water Resources' plan. Contact the following agencies to inform them of the water related incident:

Los Angles County Bureau of Environmental Protection County Environmental Health Department Local Primacy Agency
5050 Commerce Dr.
Baldwin Park, CA 91706-1423
Telephone Number: 626.430.5280
After Hours Telephone: 213.974.1234

Department of Health Services Food and Drug Branch
Los Angeles, CA
Contact:
Daytime Telephone: 213.580.5720
After Hours Telephone: 916.650.6500

- **Lab Results.** Lab should return water quality test results at least 24 hours after sampling.

- **Resampling.** Positive results require immediate follow up sampling. Sample location points up and down stream of the potentially contaminated sample.

Confirmation of contamination after an additional 48 hours requires official public notification program implementation as directed by the State Department of Public Health. However, waiting to inform the public of a water quality problem may endanger the community and information dissemination should occur before confirmation.

Notify Lakewood EOC. Contact the Operation Sections Coordinator at the Lakewood EOC via the telephone, radio or personal contact whichever is most expedient under the circumstances. The Operation Section Chief shall inform the EOC Director and the Governor's Office of Emergency Services of the contamination and activation of the public notification program. In addition the Operation Section Chief will assist in coordinating the flow of information to the following:

City Council via the EOC Director. The City Council as determined by the EOC Director or his designee.

Public Information Office. Public information personnel to determine the best plan of action.

Customer Service Employees. Other City employees that interface with the public.

Department of Health Services Licensing & Certification
Los Angeles, CA
Telephone: 626.430.5350
After Hours Telephone: 213.974.1234
Duty Officer, Health Facilities: 323.837.1005

The Lakewood EOC will contact those educational facilities affected by the incident (See section entitled: **PRIORITY FACILITIES IN LAKEWOOD** for list of schools addresses, telephone numbers and contacts:

Bellflower Unified School District
Superintendent
16703 Clark Ave.
Bellflower, CA 90706
Telephone: 562.866.9011

Long Beach Unified School District
Superintendent
Asst. Superintendent Elementary Schools
Asst. Superintendent Middle Schools
Asst. Superintendent High Schools
1515 Hughes Way
Long Beach, CA 90813
Daytime Telephone: 562.997.8000

Paramount Unified School District
Superintendent
15110 South California Ave.
Paramount, CA 90723
Daytime Telephone: 562.602.6000

St. Pancratius Elementary School
Principal
3601 St. Pancratius St.
Lakewood, CA 90712
Daytime Telephone: 562.634.6310

St. Joseph's High School
Principal
5825 Woodruff Ave.
Lakewood, CA 90713
Daytime Telephone: 562.925.5073

Mechanisms to Inform the Public

- **Public Address System.** Drive neighborhood to disseminate information using a department vehicle equipped with a portable public address system which repeats a message in English (Spanish if the neighborhood has a concentration on non-English speaking residents).

- **Use of Sky Knight Helicopter.** Fly neighborhood to disseminate information using Sky Knight helicopter and a public address system. In some instances where immediate danger may exist, the department may solicit the assistance of Sky Knight to repeat a message while flying over the neighborhood.

- **Flyer to Neighborhood.** Door to door distribution of flyers in the affected area. This tactic requires the availability of either city personnel and/or volunteers (Neighborhood Watch Block Captains). The time frame must also allow for the production of flyers.

- **Verbal Communication to Neighborhood.** Door to door verbal communication of isolated area by department personnel.

- **Reverse 911 System.** Dissemination of information to a targeted neighborhood or entire service area via the Teleworks System. Water DOC manager will request the use of this system from the Lakewood EOC. Water DOC manager will define affected area and the appropriate message based on guidance from California Department of Public Health.

- **Telephone Pool.** Vocal dissemination of information via a telephone pool. Establish a telephone pool of city staff/volunteers (including bilingual staff) to answer questions concerning the water supply problems. This alternative works only if the City's telephone system functions and sufficient manpower exists to staff the telephone pool.

- **1620AM Radio.** Radio transmission of water quality notification. Place a request with the Lakewood EOC for the broadcast of the don't drink the water or boil order notice on 1620AM.

- **News Media.** Dissemination of information to the media. If the problem covers a significant portion of the service area, the department will request that the public information officer disseminate information to the media. The public information officer shall determine the method of distribution, shall act as the sole representative to the media. No department employee shall speak to the press regarding disaster operations.

- **Emergency Broadcast System.** In the case of a severe regional disaster, the City may rely on the Emergency Broadcast System to inform the customers of possible water contamination. The Emergency Operations Director and the public information officer shall determine the need to use this mechanism to disseminate information. See the Emergency Public Information Standard Operating Procedures for policy and procedures regarding the use of the Emergency Broadcast System in the City of Lakewood Multi-Hazard Function Plan.

Confirmed Water Contamination

Upon receipt of water quality analyses that confirms a breach in water quality, the Water DOC shall request that the Lakewood EOC contact the State Department of Public Health District Sanitary Engineer and the State Department of Public Health Office in Sacramento. The department shall receive instructions from the State Department of Public Health (DPH) on the public notification process.

DPH approved methods for public notification include electronic media, newspaper or direct customer contact (flyer mailed or hand delivered). (DPH requires quarterly notification, when using direct customer contact, until resolved.) The State Department of Public Health must approve the notice and the method of dissemination prior to implementation of the notification process.

The public notice shall include the following information:

- Statement defining the drinking water standard violation and its apparent cause.

- List of the potential adverse health effects.

- Definition of population at risk.

- Steps taken to correct the violation.

- Need (if any) to seek other supplies.

- Preventive measures the customer should take to avoid exposure.

- List contact name, purveyor name, address and telephone number for further information.

Public Notice Guidelines

The public notice must contain:

- Clear and conspicuous design.

- Non-technical language.

- Easy to read print.

- Understandable language that reduces further confusion.

- Multilingual where appropriate.

Public Notification Language

Use the following statements to notify the public after confirmed water quality problems:

Violation of Total Coliform Standard

"The California Department of Public Health sets drinking water standards and has determined that the presence of total coliforms is a possible health concern. Total coliforms are common in the environment and are generally not harmful themselves. The presence of these bacteria in drinking water, however, generally is a result of a problem with water treatment or the pipes which distribute the water, and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and any associated headaches and fatigue. These symptoms, however, are not just associated with disease causing organisms in drinking water, but also may be caused by a number of factors other than your drinking water. The Department of Public Health has set an enforceable drinking water

standard for total coliforms to reduce the risk of these adverse health effects. Under this standard, no more than 5 percent of the samples collected during a month can contain these bacteria, except that systems collecting fewer than 40 samples/ month that have one total coliform-positive sample per month are not violating the standard. Drinking water which meets this standard is usually not associated with a health risk from disease causing bacteria and should be considered safe."

Presence of E. Coli

"The California Department of Public Health (Department) sets drinking water standards and has determined that the presence of fecal coliforms or E. coli is a serious health concern. Fecal coliforms and E. coli are generally not harmful themselves, but their presence in drinking water is serious because they are usually associated with sewage or animal wastes. The presence of these bacteria in drinking water is generally a result of a problem with water treatment or the pipes which distribute the water, and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and any associated headaches and fatigue. These symptoms, however, are not just associated with disease causing organisms in drinking water, but also may be caused by a number of factors other than your drinking water. The Department of Public Health has set an enforceable drinking water standard fecal coliforms and E. coli to reduce the risk of these adverse health effects. Under this standard all drinking water, which meets this standard, is associated with little or none of this risk and should be considered safe. The Department of Public Health recommends that customers take the following precautions: INSTRUCTIONS FROM DEPARTMENT OF PUBLIC HEALTH TO BE INSERTED HERE."

Violations of an MCL

Violations of an MCL can also cause serious health effects. The City shall use the same format to notify the public of a sample exceeding of an MCL. The CDPH shall determine the appropriate language for public notification in such an instance.

Emergency Public Notification Plan (continued)

State of California—Health and Human Services Agency
Department of Public Health

WATER QUALITY EMERGENCY NOTIFICATION PLAN

Name of Utility: City of Lakewood SYSTEM # 1910239

Physical Location/Address: 5050 Clark Avenue Lakewood, CA 90712

The following persons have been designated to implement the plan upon notification by the State Department of Health Services that an imminent danger to the health of the water users exists.

Water Utility: Contact Name & Title	Email Address	Telephone Day	Evening	Cell

The implementation of the plan will be carried out with the following State and County Health Department personnel:

State & County Health Departments: Contact Name & Title	Telephone Day	Evening

4. **If the above personnel cannot be reached, contact:**

Office of Emergency Services Warning Center (24 hrs)	**(800) 852-7550 or (916) 845-8911**

When reporting a water quality emergency to the Warning Center, please ask for the California Department of Health Services – Drinking Water Program Duty Officer

NOTIFICATION PLAN

Attach a written description of the method or combination of methods to be used (radio, television, door-to-door, sound truck, etc.) **to notify customers in an emergency.** For each section of your plan give an estimate of the time required, necessary personnel, estimated coverage, etc. Consideration must be given to special organizations (such as schools), non-English speaking groups, and outlying water users. Ensure that the notification procedures you describe are practical and that you will be able to actually implement them in the vent of an emergency. Examples of notification plans are attached for large, medium and small communities.

Southern California Drinking Water Field Operations Branch, Southern California Section
500 N. Central Avenue, Suite 500, Glandale, CA 91203
Telephone: (818)551-2008 Fax: (818)551-2054
Internet Address: http://www.cdph.dhs.ca.gov/ddwem/default.htm

Emergency Public Notification Plan
Elements of an Acceptable Emergency Chlorination Plan

1. Map of the distribution system indicating surface water sources, wells, storage tanks, booster stations, pressure zones and other points of emergency chlorination.

   Provide diagram.

2. Type and model of chlorinators and flow data at each point of chlorination.

   Type & Model: LMI "A" Series Electromagnetic Dosing Pump
   Flow Rate: 0.42gph

3. Schematic diagram of well site piping indicating injection points, electrical connection, location of chlorinator and piping, and Cl_2 residual test sample location.

   Provide diagram.

4. Chlorinator storage location. If not stored at the well site indicate procedure for set up.

   Storage Location: Chlorinator on site.

5. Name and grade of treatment plant operators involved in the emergency chlorination procedures.

   Water Production Personnel:

   , Water Operations Superintendent, Treatment Grade 2, Distribution Grade 5

   , Leadworker, Treatment Grade 3, Distribution Grade 5

   , Pump Station Operator, Treatment Grade 2, Distribution Grade 3

   , Pump Station Operator, Treatment Grade 3, Distribution Grade 4

   , Pump Station Operator Treatment Grade 2, Distribution Grade 3

6. Type and name of chlorine residual testing equipment.

   Chlorine Residual Testing Equipment:
   HACH Pocket Colorimeter

7. Location of Chlorine Residual Records.

   City of Lakewood
   Department of Water Resources
   Administrative Office

8. Storage location for chlorine cylinders.

   Not Applicable

9. Type of safety equipment and storage location for safety equipment.

   Safety Equipment: goggles, respirator rubber apron, and rubber gloves

   Storage Location: Pump Operator's Vehicle

10. Testing and maintenance schedule for each site.

    Not Applicable

11. Amount of chlorine contact time and rationale to determine the minimum 10 minute contact time.

    5.5 minutes contact time at test point and minimum 24 hours contact time in storage tank

12. Description of water quality that could influence disinfection efficiency, e.g. chlorine demand, pH, temperature.

    See lab results.

Water Quality Sampling Point Locations

SAMPLE #	***SAMPLE POINT***	***REPEAT FOLLOW-UP SAMPLE POINTS***
1		
2		
3		
4		
5		
6		
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CHAPTER 5
WATER WORKS SYSTEM

PART 1
GENERAL ADMINISTRATION
(Added by Ord. 75-13)

7500. WATER WORKS SYSTEM. The Water Works System of the City of Lakewood shall consist of the entire Water Works system of said City whether located within said City or beyond the boundaries of said City which has been acquired, constructed and financed by said City together with all improvements and extensions to said system later constructed or acquired.

7501. MANAGEMENT AND OPERATION. The management and operation of the Water Works System shall remain vested in the City Council, and the City Council in the exercise of its legislative, discretionary and police powers fix the level and type of service to be supplied to consumers, provide for the collection of charges for the same, provide rules and regulations in respect to the use of said service, determine and fix water rates, and do all things necessary and proper to maintain and preserve the Water Works System in good repair and working order. The management and operation of the system shall be under the control and administration of the Director of Public Works.

7502. FINANCIAL MANAGEMENT. The financial, accounting, and fiscal operation of the Water Works System shall be the responsibility of the Director of Finance.

7503. RULES AND REGULATIONS. It shall be unlawful for any person to violate any of the provisions of this Chapter or any of the provisions of the hereinafter set forth rules and regulations, as well as any of the provisions of any rules and regulations hereinafter adopted or amended by resolution. Any person, firm or corporation applying for the service of the Water Works System shall agree in writing to comply with the terms and provisions of this division, the rules and regulations herein enacted as well as any rules and regulations hereinafter enacted by resolution, as well as any amendment or addition to any of the foregoing. Said rules and regulations are as follows:

7503.1. NON-COMPLIANCE WITH RULES AND REGULATIONS. If any person fails to comply with any of the foregoing, the Director of Public Works shall be advised of such failure. If said person thereafter does not correct said non-compliance within a reasonable time after notification from the Director of Public Works to do so, the Director of Public Works shall have the right, after giving notice, to discontinue service to said person. Except in case of emergency, the Director of Public Works shall not discontinue the service of any person except on written five day notice thereof advising said person in what particular there has been a violation or non-compliance has not been remedied. This notice, however, may be dispensed with by the Director of Public Works in his discretion, in the event of an emergency demanding immediate curtailment of said service in order to protect public life or property.

7504. UNSAFE APPARATUS. The Director of Public Works shall direct that no service be supplied to a person whose service appliances or apparatus is in the judgment of the Director of Public Works unsafe, or if the utilization of water by means thereof is forbidden under the authority of any law or ordinance or regulation of this city or state.

7505. SERVICE DETRIMENTAL TO PUBLIC HEALTH OR PROPERTY. The Director of Public Works shall direct that the continuance of service to any consumer having apparatus or appliances, the operation of which is in the judgment of the Director of Public Works, would be detrimental to the water service being furnished by the city to its other consumers in the immediate vicinity or detrimental to the public health, safety and welfare, be terminated.

7506. OWNERSHIP OF THE SYSTEM. All portions and part of the Water Works System used in supplying water to the consumer shall remain the property of the city and may be only repaired, replace or removed as the city shall so direct. Property herein mentioned includes all meters and appliances, service pipe, lines and mains installed by the city whether on public property or property of the consumer.

7507. METERS. All meters shall be installed by the city and shall be only removed, repaired or replaced by the city. No rent or other charge whatsoever shall be made by the consumer for the placing of any meter or appliance upon the consumer's premises. No person shall move, repair, temper with, injure or destroy any of said meters or appliances other than a representative of the city. The city shall have the right to remove any and all of its facilities installed on a consumer's premises at the termination of service. Meters, wherever practicable shall be placed in a meter box in the roadside area and if not so practicable shall be placed in some other convenient place upon the consumer's premises so that the same at all times are accessible for inspection, reading and testing. No person, other than a representative of the city, shall make or maintain any by-pass or other connection between the meter and the main and shall not tamper with the meter in any way.

7508. RESALE OF WATER. No person may resell any of the water received by him from the city to any other person, or for any other purpose or on other premises than specified in his application for service.

7509. RIGHT OF INGRESS AND EGRESS. The city or its duly authorized agents or contractual agent, shall at all times have the right of ingress to and egress from the consumer's premises at all reasonable hours for any purpose reasonably connected with the furnishing of water and the exercise of any and all rights secured to it by law or the rules and regulations enacted hereunder. The city shall have the right to remove any and all of its property installed on the consumer's premises at the termination of service.

7510. PERSONAL GRATUITIES. All inspectors, agents and employees of the city or any contractual agent of said city in respect to the operation of said system are forbidden to demand, accept or receive any gratuity or personal compensation for services rendered to a consumer in the maintenance and operation of the water system.

7511. WRONG USE OR WASTE OF WATER. No consumer shall provide water regularly to any person, company or corporation other than the occupant or occupants of the premises of said consumer, nor shall any consumer knowingly permit leaks or waste of water.

7511.1 AUTHORIZATION TO IMPLEMENT WATER CONSERVATION ORDINANCE. The City Council is authorized to implement the provisions of the Water Conservation Ordinance upon the determination that a significant shortage in potable water supply is anticipated and implementation of the ordinance is necessary to protect the public welfare and safety. The implementation of the ordinance will occur upon the adoption of a resolution following a public hearing by the City Council. Such a public hearing shall be held to determine whether a water supply shortage exists and which conservation measures provided within the ordinance shall be implemented. (Added by Ord. 91-3)

A. GENERAL PROHIBITION. No person shall make, cause, use or permit the use of water in the City of Lakewood in a manner contrary to any provision of this ordinance or in an amount in excess of that use permitted by any curtailment provisions then in effect pursuant to action taken by the City Council in accordance with the provisions of this section. (Added by Ord. 91-3)

B. RECLAIMED WATER USE. No commercial water customer, including but not limited to commercial shopping centers, schools, office buildings, hospitals, industrial uses, and churches whose property line is located within a reasonable distance from a reclaimed water system shall continue to use potable water for the purpose of landscape irrigation after thirty (30) days written notice to connect to the City's reclaimed water system installed to the property line at the expense of the City. The connection shall be at the expense of the commercial water customer. Those customers using reclaimed water shall be exempt from the emergency rate surcharge and the restrictions regarding landscape irrigation (Added by Ord. 91-3, Amended by Ord. 2009-5)

C. IMPLEMENTATION OF GENERAL WATER CONSERVATION PRACTICES. The City Council finds that water conservation should become a way of life for Lakewood water customers, and that water is a precious resource and should not be wasted even in times when water supply meets normal demand.

1. The following water conservation practices shall be implemented when water supply meets normal demand as declared by resolution of the City Council. The following water use practices shall be maintained and no person shall violate the same:

(a) Decorative fountains, or other structures using water for aesthetic purposes shall be shut off unless such fixture operates on a recirculating system.

(b) No person shall permit leaks or waste of water. A leak shall be defined as any water not used for beneficial use that wastes more than .5 gallons of water per minute. All known leaks from indoor and outdoor plumbing fixtures shall be repaired within seven (7) days upon receipt of written notice of observed water leak. (Amended by Ord. 2009-5)

(c) Drinking water shall not be served at any restaurant, motel, café, or other drinking or eating establishment unless expressly requested.

(d) Installation of single pass cooling systems shall be prohibited in buildings requesting new water service.

(e) 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.

(f) Installation of non-re-circulating commercial car washes and laundry systems shall be prohibited.

(g) 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.

(Subsections c-g Added by Ord. 2009-5)

2. The following conservation practices are suggested when water supply meets normal demand:

(a) The use of water to wash walkways, driveways, parking areas and other hard surfaces should occur only as necessary to alleviate safety or 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. (Amended by Ord. 2009-5)

(b) 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.

(c) Voluntary water conservation field examination, herein referred to as water audits, are encouraged for all Lakewood water customers.

(d) The retrofit of water conserving devices, including but not limited to ultra low flow toilets and low flow showerheads, is encouraged.

(e) The 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 two (2) gallons of water per hour of operation. (Amended by Ord. 2009-5)

(Added by Ord. 91-13)

D. IMPLEMENTATION OF A VOLUNTARY PHASE WATER CONSERVATION PLAN. Measures instituted during a Voluntary Phase water supply shortage may be declared by Resolution of the City Council finding it necessary to conserve up to ten percent (10%) of the City's water supply. The following water conservation practices are recommended during a Voluntary Phase water shortage:

1. The following restrictions on the use of water shall be in effect during a Voluntary Phase of a water shortage and no person shall fail to comply with the following:

(a) Leaks from indoor and outdoor plumbing fixtures shall be repaired within six (6) days uon receipt of written notice of observed water leak.

2. The following water conservation practices are recommended during a Voluntary Phase water shortage:

(a) Water used to wash sidewalks, driveways, parking lots, building exteriors, streets and gutters should be minimized and should be limited to no more than (2) times during a calendar month to alleviate safety or 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 .

(b) 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 (2) gallons per hour, weather based controllers or stream rotor sprinklers meeting a seventy percent (70%) efficiency standard, or running an irrigation system for short durations to make repairs or adjustments are exempt from this provision.

(Added by Ord. 91-13, Amended by Ord. 2009-5)

E. IMPLEMENTATION OF A PHASE I MANDATORY WATER CONSERVATION PLAN. Measures instituted during a Phase I water supply shortage may be declared by Resolution of the City Council finding it necessary to conserve ten percent (10%) or greater of the City's water supply.

1. The following restrictions on the use of water shall be in effect during Phase I and any additional phases implemented during the course of a water shortage and no person shall fail to comply with the following:

(a) Water used to wash down driveways, sidewalks, parking lots, building exteriors, streets and gutters shall be limited to no more than two (2) times during a calendar month to alleviate safety or 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.

(b) Washing of vehicles and any other mobile equipment shall be done only with a bucket or a hose equipped with a positive shutoff nozzle for quick rinses. Commercial car washes are exempt from this provision.

(d) Leaks from indoor and outdoor plumbing fixtures shall be repaired within five (5) days upon receipt of written notice of observed water leak.

(e) Sprinklers shall 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 on to hardscape areas.

(Revised 2009)

2. The following water conservation practices are also recommended during a Phase I water supply shortage:

(a) 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 (2) gallons per hour, weather beased controllers or stream rotor sprinklers meeting a seventy percent (70%) efficiency standard, or running an irrigation system for short durations to make repairs are also exempt from this provision.

(Added by Ord. 91-3, Amended by Ords. 91-13 and 2009-5)

F. IMPLEMENTATION OF PHASE II WATER CONSERVATION PLAN. Measures instituted during a Phase II water supply shortage may be declared by Resolution of the City Council finding it necessary to conserve up to twenty percent (20%) of the City's water supply. The following additional restrictions shall be in effect during a Phase II water shortage:

1. Residential and commercial landscape areas shall be watered no more than three (3) times during a seven (7) day period for no more than ten (10) 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 (2) during a seven (7) day period for no more than ten (10) 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. 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 emitters producing no more than two (2) gallons per hour, weather based controllers or stream rotor sprinklers meeting a seventy percent (70%) efficiency standard, or running an irrigation system for short durations to make repairs are also exempt from this provision.

2. Non-residential water customers with a consumption in excess of 25,000 cubic feet in any billing period during the prior year, shall prepare a written water conservation plan within sixty (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.

(Added by Ord. 91-3, Amended by Ords. 91-13 and 2009-5)

3. Leaks from indoor and outdoor plumbing fixtures shall be repaired within four (4) days upon receipt of written notice of observed water leak. (Added by Ord. 2009-5)

G. IMPLEMENTATION OF PHASE III WATER CONSERVATION PLAN. Measures instituted during a Phase III water supply shortage shall be declared by Resolution of the City Council finding it necessary to conserve up to thirty percent (30%) of the City's water supply. The following additional restrictions shall be in effect during a Phase III water shortage:

1. Residential and commercial landscape areas shall be watered no more than two (2) times during a seven (7) day period for no more than ten (10) minutes at a time 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 once during a seven (7) day period for no more than ten (10) 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. Watering using a handheld bucket or similar container, a drip irrigation system with emitters producing no more than two (2) gallons per hour, weather based controllers or stream rotor sprinklers meeting a seventy percent (70%) efficiency standard, or running an irrigation system for short durations to make repairs are also exempt from this provision.

2. 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 (3) times during a seven (7) day period for no more than ten (10) 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 drip irrigation system with emitters producing no more than two (2) gallons per hour, weather based controllers or stream rotor sprinklers meeting a seventy percent (70%) efficiency standard, or running an irrigation system for short durations to make repairs are exempt from this provision. Those properties using reclaimed water are exempt from this provision.
(Added by Ord. 91-3, Amended by Ords. 91-13 and 2009-5)

3. Leaks from indoor and outdoor plumbing fixture shall be repaired within three (3) days upon receipt of written notice of observed water leak. (Added by Ord. 2009-5)

H. IMPLEMENTATION OF PHASE IV MANDATORY WATER CONSERVATION PLAN. Measures instituted during a Phase IV water supply shortage shall be declared by Resolution of the City Council finding it necessary to conserve up to forty percent (40%) of the City's water supply. The following additional restrictions shall be in effect during a Phase IV water supply shortage:

1. Residential and commercial landscape areas shall be watered no more than one (1) time during a seven (7) day period for no more than ten (10) minutes at a time 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 one (1) time during a fourteen (14) day period for no more than ten (10) 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. Watering using a handheld bucket or similar container, a drip irrigation system with emitters producing no more than two (2) gallons per hour, weather based controllers or stream rotor sprinklers meeting a seventy percent (70%) efficiency standard, or running an irrigation system for short durations to make repairs are exempt from this provision.

2. 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 twice (2) during a seven (7) day period for no more than ten (10) minutes at a time . The 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 drip irrigation system with emitters producing no more than two (2) gallons per hour, weather based controllers or stream rotor sprinklers meeting a seventy percent (70%) efficiency standard, or running an irrigation system for short durations to make repairs are exempt from this provision. Those properties using reclaimed water are exempt from this provision.
(Added by Ord. 91-13, Amended by Ord. 2009-5)

3. Leaks from indoor and outdoor plumbing fixture shall be repaired within two (2) days upon receipt of written notice of observed water leak. (Added by Ord. 2009-5)

I. IMPLEMENTATION OF PHASE V MANDATORY WATER CONSERVATION PLAN. Measures instituted during a Phase V water supply shortage shall be declared by Resolution of the City Council finding it necessary to conserve up to fifty percent (50%) of the City's water supply. The following additional restrictions shall be in effect during a Phase V water supply shortage:

1. Residential and commercial landscaping shall be restricted to watering only permanent trees and shrubs with a handheld bucket or similar container, or a drip irrigation system with emitters producing no more than two(2) gallons per hour one (1) time during a seven (7) 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 handheld bucket or similar container, or a drip irrigation system with emitters producing no more than two (2) gallons per hour one (1) time during a fourteen (14) 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.

2. Irrigation of commercial nurseries and growers shall be restricted to one (1) time during a seven (7) day period for no more than ten (10) minutes at a time and prohibited during the hours of 9:00 a.m. and 6:00 p.m. Watering using a handheld bucket or similar container, a drip irrigation system with emitters producing no more than two (2) gallons per hour, weather based controllers or stream rotor sprinklers meeting a seventy percent (70%) efficiency standard, or running an irrigation system for short durations to make repairs are exempt from this provision. Those properties using reclaimed water are exempt from this provision.
(Added by Ord. 91-13, Amended by Ord. 2009-5)

3. Irrigation of active parks and playing fields, golf course greens, school grounds, landscape for fire protection and the support of protected species, and environmental mitigation projects shall be restricted to no more than twice (2) during a seven (7) day period for no more than ten (10) minutes at a time. The 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 drip irrigation system with emitters producing no more than two (2) gallons per hour, weather based controllers or stream rotor sprinklers meeting a seventy percent (70%) efficiency standard, or running an irrigation system for short durations to make repairs are exempt from this provision. Those properties using reclaimed water are also exempt from this provision. (Added by Ord. 2009-5)

4. Leaks from indoor and outdoor plumbing fixtures shall be repaired within 24 hours upon receipt of written notice of observed water leak. (Added by Ord. 2009-5)

J. EMERGENCY RATE SURCHARGE TO OBTAIN WATER CONSERVATION.

1. At such time that the City Council determines that a specific conservation effort is required, the City Council shall adopt a resolution declaring the specific phase water conservation. The corresponding rate structure as contained in Resolution No. 91-68 shall take effect within thirty (30) days of such determination.

2. Subject to revenue bond covenants, these funds shall be used to offset revenue loss due to reduced water consumption and pay for such conservation measures as approved by the City Council.

(Added by Ord. 91-3, Amended by Ord 91-13)

3. This ordinance shall not provide any provision for relief from the emergency rate surcharge. (Added by Ord. 2009-5)

K. RELIEF FROM COMPLIANCE. Any person to whom this ordinance applies may file for relief from any or all provisions in this ordinance. The Director of Water Resources or his designee shall develop and implement procedures necessary to consider a customer's application for relief. No relief shall be granted except upon proof of reasonable inability to comply with the provisions of this section, or upon proof of other reasonable conservation alternatives which will achieve conservation measures sought by this section, or upon proof of substantial hardship outweighing the benefits this section would otherwise provide. Commercial customers shall submit a water conservation plan with the request for relief. The Director of Water Resources or his designee shall use the following criteria to grant relief from this ordinance:

1. The relief from compliance does not constitute a special privilege inconsistent with the limitations upon other water customers in the same rate class.

2. Special circumstances applicable to the property or its use exist and strict application of this ordinance would cause a disproportionate impact on the property or use that exceeds the impacts to residents and businesses generally.

3. The relief from compliance will not cause substantial detriment to adjacent properties and will not affect the City of Lakewood's ability to effectuate the purpose of the ordinance and will not be detrimental to the public interest.

4. The condition or situation of the subject property or the intended use of the property is not common.

All criteria shall be met to obtain relief from compliance. The decision of the Director of Water Resources or his designee shall be final unless written appeal to the City Council setting forth the grounds of appeal is filed with the City Clerk within thirty (30) days of the mailing or delivery to said person of the written decision of the Director of Water Resources.

The decision of the Director of Water Resources or his designee shall be forwarded in writing no later than 15 days after the receipt of the application for relief unless additional time has been requested.

(Added by Ord. 91-3, Amended by Ords. 91-13 and 2009-5)

L. FAILURE TO COMPLY WITH MANDATORY WATER CONSERVATION MEASURES. In addition to the provisions of Section 7511.2, any person who fails to comply with any of the mandatory water conservation measures imposed by the implementation of this section shall be subject to an improper water users fee or charge as hereinafter set forth:

1. The following charges are not imposed as a penalty but as a charge for excessive or improper use of water. The charges are necessary in order to recover the reasonable cost of enforcement of the mandatory water provisions and in order to obtain the goals of the water conservation measures contained in this section:

(a) First Violation. The City of Lakewood shall issue a written warning to the customer for the first violation.

(b) Second and Third Violations. The City of Lakewood shall issue a written notice and assess an improper water use fee of $100.00. If the fee is not paid in full within fifteen (15) days of issuance the amount will be added to the customer's bi-monthly water bill.

(c) Fourth Violation. The City of Lakewood shall issue a written notice, charge an improper water use fee of $200.00 and install a flow restricting device on the customer's water service for a period of not less than twenty-four (24) hours. Such flow restricting device shall reduce water flow to one (1) gallon per minute for metered services one and one half inch (1½") or under. Similar devices will be placed on larger meters. The fee shall be paid prior to the resumption of normal water service.

(d) Fifth Violation. The City of Lakewood shall issue a written notice, charge an improper water use fee of $500.00 and install a flow restricting device on the customer's water service for a period of not less than forty-eight (48) hours. Such flow restriction device shall reduce water flow to one (1) gallon per minute for the metered service, one and one-half inch (1½") or under. A similar device shall be placed on larger meters. The fee shall be paid prior to resumption of normal water service.

2. Notification of Violation. Notice of violation shall be given in writing in one of the following methods:

(a) Personal delivery of the notice to the customer.

(b) If the customer is absent from or unavailable at the premises at which the violation occurred, the notice can be left with a responsible person at the premises and a copy mailed to the customer at the billing address.

(c) If a responsible person is not available at the premises at which the violation occurred, then the notice can be affixed in a conspicuous place on the premises and a copy mailed to the customer at the billing address.

Notification shall include a description of the facts in regard to the violation, a statement of the possible penalties for each violation and the statement of the customer's right to a hearing on the merits of the violation as stated in Section M.

(Added by Ord. 91-3, Amended by Ords. 91-13 and 2009-5)

M. HEARING FOR VIOLATIONS. Any customer receiving a fourth (4) or subsequent violation notice shall be entitled to a hearing with the City Manager or his designee within fifteen (15) days of delivery of the violation notice. The following steps shall be taken to process a request for a hearing:

1. The customer shall provide a written request for a hearing. A prompt request for hearing shall automatically stay installation of a flow restricting device or shut off on the customer's water service until the decision is rendered by the City Manager or his designee.

2. The customer's request for a hearing shall not stay the imposition of a fee. If it is determined that a fee is wrongly assessed, the City will refund any fee paid by the customer.

3. The decision of the City Manager or his designee shall be final except for judicial review. Any and all measures of the provisions stated herein shall be implemented throughout the judicial appeal process.

(Added by Ord. 91-3, Amended by Ords. 91-13 and 2009-5)

N. ADDITIONAL WATER CONSERVATION MEASURES. The City Council may order implementation of further water conservation measures in addition to those set forth in this Section. Such measures shall be instituted by the City Council with the adoption of a resolution.

(Added by Ord. 91-3, Amended by Ord. 91-13)

O. PUBLIC HEALTH AND SAFETY SHALL NOT BE AFFECTED. No provision of this section shall be construed to require the City to curtail the supply of water to any customer when such water is required by that customer to maintain an adequate level of public health and safety.

(Added by Ord. 91-3, Amended by Ord. 91-13)

7511.2 VIOLATION A MISDEMEANOR. Notwithstanding any provision of this Code to the contrary, the provisions of Section 377 of the California Water Code shall be applicable to any violation of the provisions of Section 7511.1. No person shall violate any provision of Section 7511.1 or fail to comply with any of the requirements of this section or any Resolution adopted pursuant thereof. Any person violating any of the provisions of Section 7511.1 or any Resolution adopted pursuant thereto or failing to comply with any of the mandatory requirements of Section 7511.1 or any of the Resolutions adopted pursuant thereof shall be guilty of a misdemeanor. Upon conviction thereof, such person shall be punished by imprisonment in the County jail for not more than thirty (30) days or by a fine not exceeding $1,000.00, or both.

(Added by Ord. 91-3)

7512. ILLEGAL CONNECTION TO WATER SYSTEM. No person shall install or maintain, or permit to be installed or maintained, any connection or cross-connection between the water supply system of the city and any other source of water supply whatsoever, without the approval of the Director of Public Works.

7513. ADDITIONAL RULES AND REGULATIONS. The City Council may from time to time amend, alter, or add additional rules and regulations pertaining to the maintenance, operation and use of the Water Works System owned by the City of Lakewood. In addition, the City Council may by resolution adopt such additional rules and regulations pertaining to the maintenance and operation and use of the Water Works System as it deems necessary, including charges for the use of said services, which said rules and regulations may be amended, altered, repealed, or supplemented by the City Council from time to time. The Director of Public Works, as to matters within his jurisdiction, and the Director of Finance, as to matters within his jurisdiction, are hereby authorized and directed to enforce this Chapter, to interpret and apply the rules and regulations herein enacted, or hereinafter enacted by the City Council. Any person aggrieved by the decision of the aforementioned officers may appeal said decision to the City Council, and the decision of the City Council shall be final and conclusive. (Amended by Ord. 2005-15)

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

ACCOUNT #:			DATE:
NAME:			
TELEPHONE:		DAY	EVENING
SERVICE ADDRESS:			
	Street	City	Zip Code
BILLING ADDRESS:			
	Street	City	Zip Code

A customer may apply for relief from the provisions in the City of Lakewood Water Conservation Ordinance 91-3. No relief shall be granted without proof of reasonable inability to comply with the provisions in the ordinance, proof that alternative conservation measures have been adopted by the customer, or proof that the water use restrictions would provide substantial hardship on the customer outweighing the benefits of water conservation. Commercial customers must submit a water conservation plan with this request.

The customer shall complete this form and return it to the **CITY OF LAKEWOOD DEPARTMENT OF WATER RESOURCES, 5050 N. Clark Avenue, Lakewood, CA 90712**. The decision of the Director of Water Resources shall be rendered within fifteen (15) days after the receipt of the request for exemption. The decision of the Director of Water Resources may be appealed by filing with the City Clerk within thirty (30) days after receipt of said decision.

Please complete the following information as thoroughly as possible. Failure to provide necessary information could result in automatic denial of your request.

I am requesting an exemption from the above mentioned water use restriction(s) for the following reason(s):

Type of exemption from improper water use restrictions:

- ☐ Washing Down Driveway 7511.1c.1 LMC
- ☐ Washing Down Sidewalk 7511.1c.1 LMC
- ☐ Washing Down Parking Lots 7511.1c.1 LMC
- ☐ Washing Down Building Exterior 7511.1c.1 LMC
- ☐ Washing Down Streets and Gutters 7511.1c.1 LMC
- ☐ Washing Vehicles without Shut Off Valve 7511.1c.2 LMC
- ☐ Washing Equipment without Shut Off Valve 7511.1c.2 LMC
- ☐ Non-recirculating Fountains 7511.1c.3 LMC
- ☐ Unrepaired Plumbing Leak 7511.1c.5 LMC
- ☐ Improper Irrigation 7511.1c Water Run-off 7511.1c.7 LMC.6 LMC

I am requesting an exemption from the above mentioned water use restriction(s) for the following reason(s):

- ☐ In the process of testing, adjusting or repairing sprinklers.
- ☐ Health condition that limits ability to conform to water use restrictions. (Please attach a statement from a physician.)
- ☐ Hosing new paved surface for the purpose of curing for up to one month after paving.
- ☐ Hosing hardscape due to unsanitary condition.
- ☐ Dust control due to construction.
- ☐ Public health and safety.
- ☐ Police, fire or other similar emergency service.
- ☐ Other:

Explanation. Please explain the circumstances present at the time you received the "Notice of Improper Water Use" and any other relevant information that would facilitate the processing of this appeal. (Attach additional sheets if necessary.):

I certify that the information contained in this appeal is complete and accurate to the best of my knowledge.

Signature of Customer

Date

LAKEWOOD DEPARTMENTOF WATER RESOURCES USE ONLY
Notice of Improper Water Use Appeal

Approval Date:

Denied Date:

Authorized Personnel:

Name

Title

RESOLUTION NO. 2015-15

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LAKEWOOD EXTENDING WATER CONSERVATION MEASURES BY REASON OF REGULATIONS IMPOSED BY THE STATE OF CALIFORNIA

WHEREAS, on August 12, 2014, the City Council adopted Resolution No. 2014-54, imposing water conservation measures in response to regulations imposed by the State of California; and

WHEREAS, Resolution No. 2014-54 states that it shall remain in effect until May 12, 2015, which expiration date was chosen in anticipation that the State would promulgate new regulations by such expiration date; and

WHEREAS, the State did not complete the process of promulgating new regulations in time for the City to impose new conservation measures prior to the expiration date of May 12, 2015, contained in Resolution No. 2014-54; and

WHEREAS, Water Code section 1058.5 grants the State Water Board the authority to adopt emergency regulations in certain drought years in order to: "prevent the waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion, of water, to promote water recycling or water conservation, to require curtailment of diversions when water is not available under the diverter's priority of right, or in furtherance of any of the foregoing, to require reporting of diversion or use or the preparation of monitoring reports";

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF LAKEWOOD DOES RESOLVE AS FOLLOWS:

SECTION 1. All of the provisions set forth in Resolution No. 2014-54 shall remain in force and effect until subsequent action of the City Council superseding such provisions.

SECTION 2. Under State Board Authority the following Emergency Orders are implemented to prevent the waste and unreasonable use of water and to promote water conservation, each of the following actions is prohibited, except where necessary to address an immediate health and safety needs:

(a) The application of potable water to outdoor landscapes during and within 48 hours after measurable rainfall;
(b) The irrigation with potable water of ornamental turf on public street medians; and
(c) The irrigation with potable water of landscapes outside of newly constructed homes and buildings that is not delivered in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission.

ADOPTED AND APPROVED THIS 12TH DAY OF MAY, 2015.

Mayor

ATTEST:

City Clerk

City of Lakewood Department of Water Resources
Residential Water Audit Checklist

Name _____ Telephone _____

Address _____ Own Home ☐ Rent Home ☐

_____ Last Water Bill _____ Hcf

Review Billing History with Customer YES ☐ NO ☐
Comment _____
Instruction on Reading Water Bill YES ☐ NO ☐
Instruction on Reading Water Meter YES ☐ NO ☐
Comment

Leaks

Shut Off All Water on Premises for 15 minutes to check for leaks. YES ☐ NO ☐

Comment _____
Current Read (Including Sweep Hand)
Comment _____
If movement of sweep hand occurs close the house valve. Any apparent movement of sweep hand on water to determine if leak is internal of external.
INTERNAL ☐ EXTERNAL ☐
Comment _____
Meter Read after 15 minutes
Any apparent movement of sweep hand on water meter? YES ☐ NO ☐
Comment _____

OUTSIDE WATER USE

Hardscape

Swimming Pool		YES ☐	NO ☐
	Swimming Pool Cover	YES ☐	NO ☐
	Pool Temperature		
Spa		YES ☐	NO ☐
	Spa Cover	YES ☐	NO ☐
	Spa Temperature		
Fountain		YES ☐	NO ☐
	Recirculating Water	YES ☐	NO ☐

Comment _____

Landscape

Turf	Type	
	% of Property	
	Height of Turf	
	Moisture of Turf	

	Aerated or Dethatched	YES ☐	NO ☐
	Date of Last Aeration or Dethatching	YES ☐	NO ☐
Trees and Shrubs	Type		
	Number on Property		
	Size	Small ____	
		Medium ____	
		Large	
	Mulch at Base of Shrubs	YES ☐	NO ☐
Flowering Plants			
	Type		
	Number on Property		
	Moisture Around Plants	WET ☐	DRY ☐
	Mulch at Base of Plants	YES ☐	NO ☐

Comment _____

Landscape Maintenance

Irrigation Practices

Automatic Water System	Manual System ☐	Automatic System ☐
Checked Irrigation Timers	YES ☐	NO ☐
Watering Frequency		
Time of Day Watering Occurs		
Length of Watering Time		
Volume of Sprinkler Heads		
Number of Sprinkler Heads		
Checked for Over Spray	YES ☐	NO ☐
Comment		
Checked for Broken Sprinkler Heads	YES ☐	NO ☐
Comment		
Lo Flow Sprinkler Heads	YES ☐	NO ☐
Comment		
Drip Irrigation System	YES ☐	NO ☐
Comment		
Watering Frequency		
Time of Day Watering Occurs		
Size of Emitters		
Moisture Sensing System	YES ☐	NO ☐
Comment		

INDOOR WATER USE

Kitchen

Faucet Flow Restrictor	YES ☐	NO ☐
Dishwasher	YES ☐	NO ☐
Dishwasher with Short Cycle	YES ☐	NO ☐
Water Filtering System	YES ☐	NO ☐
Garbage Disposal	YES ☐	NO ☐

Comments _____

Laundry

Washing Machine with Short Cycle YES ☐ NO ☐

Water Softener YES ☐ NO ☐

Comments

Bathroom

Toilet

Checked for Leaks YES ☐ NO ☐

Use per Flush 7-5 gals. ☐ 3.5 gals. ☐ 1.3 gals. ☐

Faucet Flow Restrictor YES ☐ NO ☐

Bathtub

Normal Fill _____ Gallons

Shower

Water Conserving Flow Restrictor YES ☐ NO ☐

Bidet YES ☐ NO ☐

Water Used per Use _____ Gallons

Comment _____

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WATERWISE
CONSULTING, INC.

City of Lakewood

Facility Details

April 1, 2009

The City of Lakewood

Individual Site Reports

City of Lakewood

Simon Bolivar Park

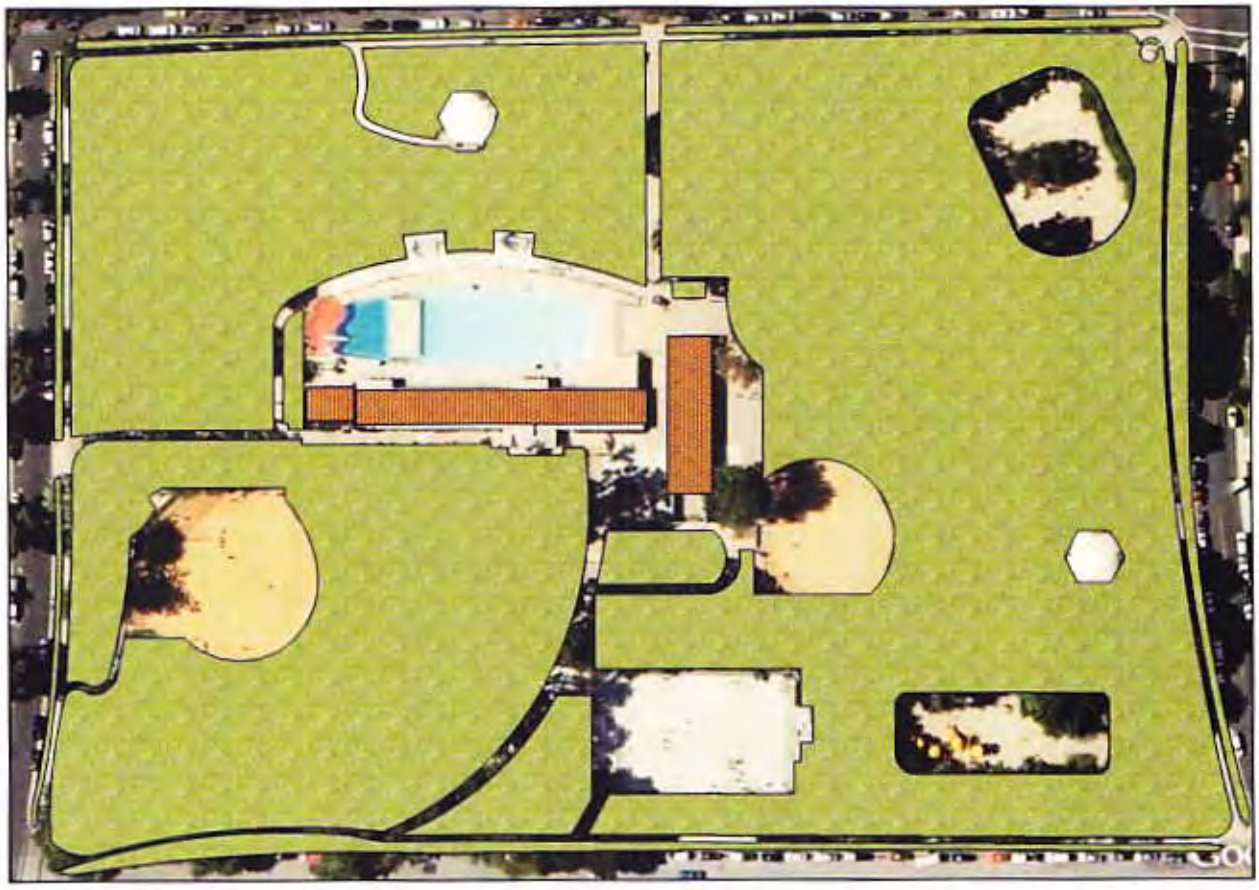
3300 Del Amo Boulevard
Lakewood, CA 90712

Audit Date:	November 13, 2008
Auditor:	Enrique Zanetti
Assistant:	Chris Jackson
Building Area:	9,382 sq ft
Landscape Irrigated Area:	333,996 sq ft
Total Area:	343,378 sq ft

City of Lakewood

Simon Bolivar Park

3300 Del Amo Boulevard
Lakewood, CA 90712



Building Area: 9,382 sq ft

Landscape Irrigated Area: 333,996 sq ft

Simon Bolivar Park

November 13, 2008

Sprinklers that are installed too low cause spray/stream blockage and create dry circles around the sprinklers.

Poor distribution uniformity may be a result of having tipped heads in the irrigation system. Correcting uniformity issues could result in water savings through decreases in run times.

The above photos are examples of leaking and broken heads that are creating major water losses. A broken/leaking head can lead to reduced pressure over an entire station.

Here is an example of a clogged nozzle. Clogged nozzles at Simon Bolivar Park can be easily reduced by routine maintenance.

Arc misalignment is a problem that is easy to solve during maintenance. On spray stations, this is causing wasted water and on rotor stations it is also affecting the distribution uniformity.

Overspray is often a problem on sidewalks and parkways. We recommend adjusting the radius of throw or replacing the nozzles with strip series nozzles types.

Landscape Data - Active Stations By Controller

Facility: Simon Bolivar Park	Address: 3300 Del Amo Blvd., Lakewood, CA 90712		Location: See map	Work Order:
Irrigation Controller Make & Model: Aqua Dial Ace 11 (Controller I)	WBIC?: N	Total Stations: 11	Active Stations: 9	Area Description: South & East Side of Park

				Sprinkler Type								Sprinkler Condition								System Condition										
Station No.	Microclimate	Plant Material	Plant Density	Sprinkler Make	Rotor	Spray	Stream Rotor	Rotary Nozzle	Bubbler	Micro Spray	Drip	Low	Tipped	Arc Misaligned	Clogged	Leaking	Broken Head	Non-rotating Head	Overspray	Spray Blocked	Effective	Head-Head Spacing	Pressure Reading	High/Low Pressure	Broken Irr. Line	Valve Malfunction	Photograph	Replace Nozzles	Planter Area	Quantity	Notes
1	H	T Tr	H	T		25							6						4		Y	Y		OK					S M L		
2	M	T Tr	H	T-O		19							2	2					1		Y	Y		OK			7		S M L		
3	M	T Tr	H	T		44						4	2	6		3					Y	Y		OK			12		S M L		
4	M	T Tr	H	T-O		37						2	8	1		2			1		Y	Y		OK	1		15		S M L		sprikler in the roots of a big tree
5	M	T	H	T-O		51							5	4		5	2		51		N	Y		OK			23		S M L		severe broken head, 6 gpm, mixed heads
6	M	T Tr	M	T-O		36							6		3	2	1		5		Y	Y		OK			32		S M L		1 is clogged, low & jammed, mixed heads
7	H	T	H	T-O		49						19	3	7	1	1	1		47		N	Y		OK			38		S M L		Major Runoff!
8	M	T Tr	H	T		22							5	3		2					Y	Y		OK					S M L		
9	M	T Tr	M	T-O		47							3	3	1	2			7		Y	Y		OK					S M L		Really bad design

Reference Codes

Microclimate		Plant Material H/M/L		Density		Sprinkler Make		Area	
H	High	T	Turf	H	High	R	Rainbird	S	25 sq ft
M	Medium	S	Shrubs	M	Medium	T	Toro	M	50 sq ft
L	Low	G	Ground Cover	L	Low	H	Hunter	L	100 sq ft
		M	Mixed			I	Irritrol		
		Tr	Trees			O	Other		

Soil Type		Water Source	
Clay		Potable	O
Loam	O	Recycled	
Sand			

Turf Information	
Existing Synthetic Turf:	N
System Information	
Booster Pump:	N
Pressure Regulator:	N

Auditor Name: Enrique Zanetti

Auditor Name: Chris Jackson

Time In:

Appointment:

Landscape Data - Active Stations By Controller

Facility: Simon Bolivar Park	Address: 3300 Del Amo Blvd., Lakewood, CA	Location: See map	Work Order:

Irrigation Controller Make & Model: Aqua Dial Ace 23 (Controller II)	WBIC?: N	Total Stations: 23	Active Stations: 21	Area Description: east side of park

				Sprinkler Type								Sprinkler Condition									System Condition										
Station No.	Microclimate	Plant Material	Plant Density	Sprinkler Make	Rotor	Spray	Stream Rotor	Rotary Nozzle	Bubbler	Micro Spray	Drip	Low	Tipped	Arc Misaligned	Clogged	Leaking	Broken Head	Non-rotating Head	Overspray	Spray Blocked	Effective	Head-Head Spacing	Pressure Reading	High/Low Pressure	Broken Irr. Line	Valve Malfunction	Photograph	Replace Nozzles	Planter Area	Quantity	Notes
1	H	T Tr	H	T		26						1	2	10	2	2					N	Y		OK					S M L		Bad design
2	H	T Tr	H	T		15							2	2		2					Y	Y		OK			46		S M L		Mixed nozzles
4	H	T Tr	H	H R	13							3	5	5					3		Y	Y	45	OK			52		S M L		bad design, mixed nozzles
5	H	T	H	H O	7							4	1	2		1			4		Y	Y	45	L			56		S M L		O means Thompson
6	M	T Tr	H	H O	6								2	5				1	4		Y	Y	40	L			62		S M L		bad design
7	M	T Tr	H	H T	4								1	2					2		Y	Y	35	L					S M L		Old sprinklers toro, sidewalk is irrigated from one side
8	H	T Tr	H	H O	9							3	2	3					3	1	Y	Y	30	L			67		S M L		Mixed sprinklers, different nozzles in the same area
9	H	T	H	T O		28						10	8	9	1	5			28		N	Y		OK			71		S M L		All are overspray
10	L	T	M	T		10						1	3	1	1						Y	N		OK					S M L		
11	H	T Tr	H	H T O	9							5	1						1		Y	Y	30	L			75		S M L		irrigating the picnic area
12	M	T Tr	H	H O	4							2									Y	Y	40	L					S M L		irrigating the picnic area

Reference Codes

Microclimate		Plant Material H/M/L		Density		Sprinkler Make		Area	
H	High	T	Turf	H	High	R	Rainbird	S	25 sq ft
M	Medium	S	Shrubs	M	Medium	T	Toro	M	50 sq ft
L	Low	G	Ground Cover	L	Low	H	Hunter	L	100 sq ft
		M	Mixed			I	Irritrol		
		Tr	Trees			O	Other		

Soil Type		Water Source	
Clay		Potable	O
Loam	O	Recycled	
Sand			

Turf Information	
Existing Synthetic Turf:	N
System Information	
Booster Pump:	N
Pressure Regulator:	N

Auditor Name: Enrique Zanetti

Auditor Name: Chris Jackson

Time In:

Appointment:

Landscape Data - Active Stations By Controller

Facility: Simon Bolivar Park	Address: 3300 Del Amo Blvd., Lakewood, CA	Location: See map	Work Order:

Irrigation Controller Make & Model: Aqua Dial Ace 23 (Controller II)	WBIC?: N	Total Stations: 23	Active Stations: 21	Area Description: east side of park

				Sprinkler Type								Sprinkler Condition								System Condition										
Station No.	Microclimate	Plant Material	Plant Density	Sprinkler Make	Rotor	Spray	Stream Rotor	Rotary Nozzle	Bubbler	Micro Spray	Drip	Low	Tipped	Arc Misaligned	Clogged	Leaking	Broken Head	Non-rotating Head	Overspray	Spray Blocked	Effective	Head-Head Spacing	Pressure Reading	High/Low Pressure	Broken Irr. Line	Valve Malfunction	Photograph	Replace Nozzles	Planter Area	Quantity	Notes
13	H	T Tr	H	H R O	10							7	2						1		Y	Y	30	L			82		S M L		irrigating the picnic area
14	H	T Tr	H	H R	9								3	5		1			2		Y	Y	35	L					S M L		
15	H	T Tr	H	H T O	10							4	3	5				1	2	2	Y	Y	35	L					S M L		
16	M	T Tr	H	T O		32							5	8	2	1					Y	Y		OK					S M L		
17	M	T Tr	H	T O		22						1	9			2			1		Y	Y		OK					S M L		
18	M	T Tr	H	T		26						2	6	5		2			1		Y	Y		OK			91		S M L		
19	L	T Tr	M	T		24							1	2	5	2	1		2		Y	Y		OK			105		S M L		bad design inside playground
20	M	T	H	T O		41						2	4	15		8					Y	Y		OK			95		S M L		bad design on sidewalk, 1 leak
21	M	T Tr	H	H O	9							4	1			1			4		Y	Y	35	L					S M L		bad design, mixed heads
22	M	T Tr	H	T		32						9	9	13		4					Y	Y		OK			103		S M L		sidewalk bad design

Reference Codes

Microclimate		Plant Material H/M/L		Density		Sprinkler Make		Area	
H	High	T	Turf	H	High	R	Rainbird	S	25 sq ft
M	Medium	S	Shrubs	M	Medium	T	Toro	M	50 sq ft
L	Low	G	Ground Cover	L	Low	H	Hunter	L	100 sq ft
		M	Mixed			I	Irritrol		
		Tr	Trees			O	Other		

Soil Type		Water Source	
Clay		Potable	O
Loam	O	Recycled	
Sand			

Turf Information	
Existing Synthetic Turf:	N
System Information	
Booster Pump:	N
Pressure Regulator:	N

Auditor Name: Enrique Zanetti

Auditor Name: Chris Jackson

Time In:

Appointment:

Landscape Data - Active Stations By Controller

Facility: Simon Bolivar Park	Address: 3300 Del Amo Blvd., Lakewood, CA	Location: See map	Work Order:

Irrigation Controller Make & Model: Rain Master Sentar II (Controller III)	WBIC?: N	Total Stations: 24	Active Stations: 22	Area Description: west & south side

				Sprinkler Type								Sprinkler Condition									System Condition										
Station No.	Microclimate	Plant Material	Plant Density	Sprinkler Make	Rotor	Spray	Stream Rotor	Rotary Nozzle	Bubbler	Micro Spray	Drip	Low	Tipped	Arc Misaligned	Clogged	Leaking	Broken Head	Non-rotating Head	Overspray	Spray Blocked	Effective	Head-Head Spacing	Pressure Reading	High/Low Pressure	Broken Irr. Line	Valve Malfunction	Photograph	Replace Nozzles	Planter Area	Quantity	Notes
1	M	T Tr	H	H O	7								1	2					1		Y	Y	40	L			110		S M L		Thompson heads
3	H	T	M	H	12							1	4	2							Y	Y	20	L					S M L		
4	M	T Tr	H	H O	5							3	1								Y	Y	30	L					S M L		
5	H	T	H	H R	2																Y	Y	40	L					S M L		
6	M	T Tr	H	H O	3							2									Y	Y	35	L			111		S M L		
7	H	T	H	T		38						6	3	2		12			38		N	Y		OK			117		S M L		a lot of old leaking heads
8	M	T	H	H O	3							3		1							Y	Y	38	L			118		S M L		
9	H	T	H	H O	2									1							Y	Y	45	OK			119		S M L		
10	M	T Tr	H	H O	8								2	1		1				1	Y	Y	30	L					S M L		
11	M	T Tr	H	H O	6							3		1							Y	Y	35	L					S M L		
12	M	T Tr	H	H R O	7							3	2		2						Y	Y	35	L					S M L		1 is not rotating

Reference Codes

Microclimate		Plant Material H/M/L		Density		Sprinkler Make		Area	
H	High	T	Turf	H	High	R	Rainbird	S	25 sq ft
M	Medium	S	Shrubs	M	Medium	T	Toro	M	50 sq ft
L	Low	G	Ground Cover	L	Low	H	Hunter	L	100 sq ft
		M	Mixed			I	Irritrol		
		Tr	Trees			O	Other		

Soil Type		Water Source	
Clay		Potable	O
Loam	O	Recycled	
Sand			

Turf Information	
Existing Synthetic Turf:	N
System Information	
Booster Pump:	N
Pressure Regulator:	N

Auditor Name: Enrique Zanetti

Auditor Name: Chris Jackson

Time In:

Appointment:

Landscape Data - Active Stations By Controller

Facility: Simon Bolivar Park	Address: 3300 Del Amo Blvd., Lakewood, CA	Location: See map	Work Order:

Irrigation Controller Make & Model: Rain Master Sentar II (Controller III)	WBIC?: N	Total Stations: 24	Active Stations: 22	Area Description: west & south side

				Sprinkler Type								Sprinkler Condition									System Condition											
Station No.	Microclimate	Plant Material	Plant Density	Sprinkler Make	Rotor	Spray	Stream Rotor	Rotary Nozzle	Bubbler	Micro Spray	Drip	Low	Tipped	Arc Misaligned	Clogged	Leaking	Broken Head	Non-rotating Head	Overspray	Spray Blocked	Effective	Head-Head Spacing	Pressure Reading	High/Low Pressure	Broken Irr. Line	Valve Malfunction	Photograph	Replace Nozzles	Planter Area	Quantity	Notes
13	M	T Tr	H	H	6							1		2					1	1	Y	Y	35	L			122		S M L		1 is not rotating
14	H	T	H	H O	5							3	1								Y	Y	40	L			125		S M L		
15	H	T	H	T O		58						5	3	1		20					N	Y		OK			130		S M L		old leaking heads & a Major broken head 6 gpm
16	M	T Tr	H	T O		39						3	3	2	1	2			5		Y	Y		OK			132		S M L		
17	H	T Tr	H	H T	7							4	1								Y	Y	40	L					S M L		
18	M	T Tr	H	H	7							3		3					1		Y	Y	45	OK			133		S M L		1 is not rotating, is over watering
19	H	T Tr	H	H R	8							2	3	1							Y	Y	40	L					S M L		
20	H	T	H	T O		40						2	4	6		14			40		N	Y		OK			139		S M L		
21	M	T Tr	H	T O		37							5	6	2	2			8		Y	Y		OK			140		S M L		
23	M	T Tr	H	R H	6														1		Y	Y	45	OK					S M L		
24	M	T	H	R	6														1		Y	Y	45	OK					S M L		

Reference Codes

Microclimate		Plant Material H/M/L		Density		Sprinkler Make		Area	
H	High	T	Turf	H	High	R	Rainbird	S	25 sq ft
M	Medium	S	Shrubs	M	Medium	T	Toro	M	50 sq ft
L	Low	G	Ground Cover	L	Low	H	Hunter	L	100 sq ft
		M	Mixed			I	Irritrol		
		Tr	Trees			O	Other		

Soil Type		Water Source	
Clay		Potable	O
Loam	O	Recycled	
Sand			

Turf Information	
Existing Synthetic Turf:	N
System Information	
Booster Pump:	N
Pressure Regulator:	N

Auditor Name: Enrique Zanetti

Auditor Name: Chris Jackson

Time In:

Appointment:

Landscape Data - Active Stations By Controller

Facility: Simon Bolivar Park	Address: 3300 Del Amo Blvd., Lakewood, CA	Location: See map	Work Order:

Irrigation Controller Make & Model: Manual	WBIC?: N	Total Stations: 1	Active Stations: 1	Area Description: west side of the swimming pool

				Sprinkler Type								Sprinkler Condition								System Condition										
Station No.	Microclimate	Plant Material	Plant Density	Sprinkler Make	Rotor	Spray	Stream Rotor	Rotary Nozzle	Bubbler	Micro Spray	Drip	Low	Tipped	Arc Misaligned	Clogged	Leaking	Broken Head	Non-rotating Head	Overspray	Spray Blocked	Effective	Head-Head Spacing	Pressure Reading	High/Low Pressure	Broken Irr. Line	Valve Malfunction	Photograph	Replace Nozzles	Planter Area	Quantity	Notes
1	M	TS	H	T		14							2						3		Y	Y		OK					S M L		

Reference Codes

Microclimate		Plant Material H/M/L		Density		Sprinkler Make		Area	
H	High	T	Turf	H	High	R	Rainbird	S	25 sq ft
M	Medium	S	Shrubs	M	Medium	T	Toro	M	50 sq ft
L	Low	G	Ground Cover	L	Low	H	Hunter	L	100 sq ft
		M	Mixed			I	Irritrol		
		Tr	Trees			O	Other		

Soil Type		Water Source	
Clay		Potable	O
Loam	O	Recycled	
Sand			

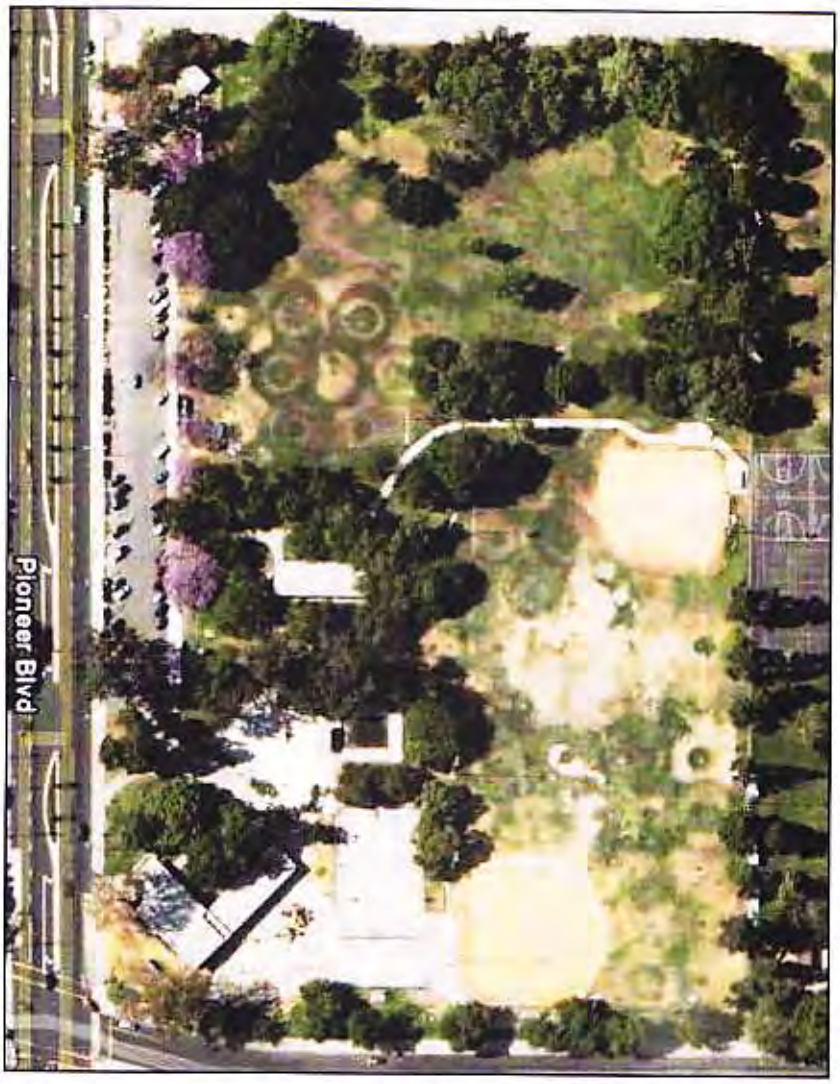
Turf Information	
Existing Synthetic Turf:	N
System Information	
Booster Pump:	N
Pressure Regulator:	N

Auditor Name: Enrique Zanetti

Auditor Name: Chris Jackson

Time In:

Appointment:



City of Lakewood

Bloomfield Park

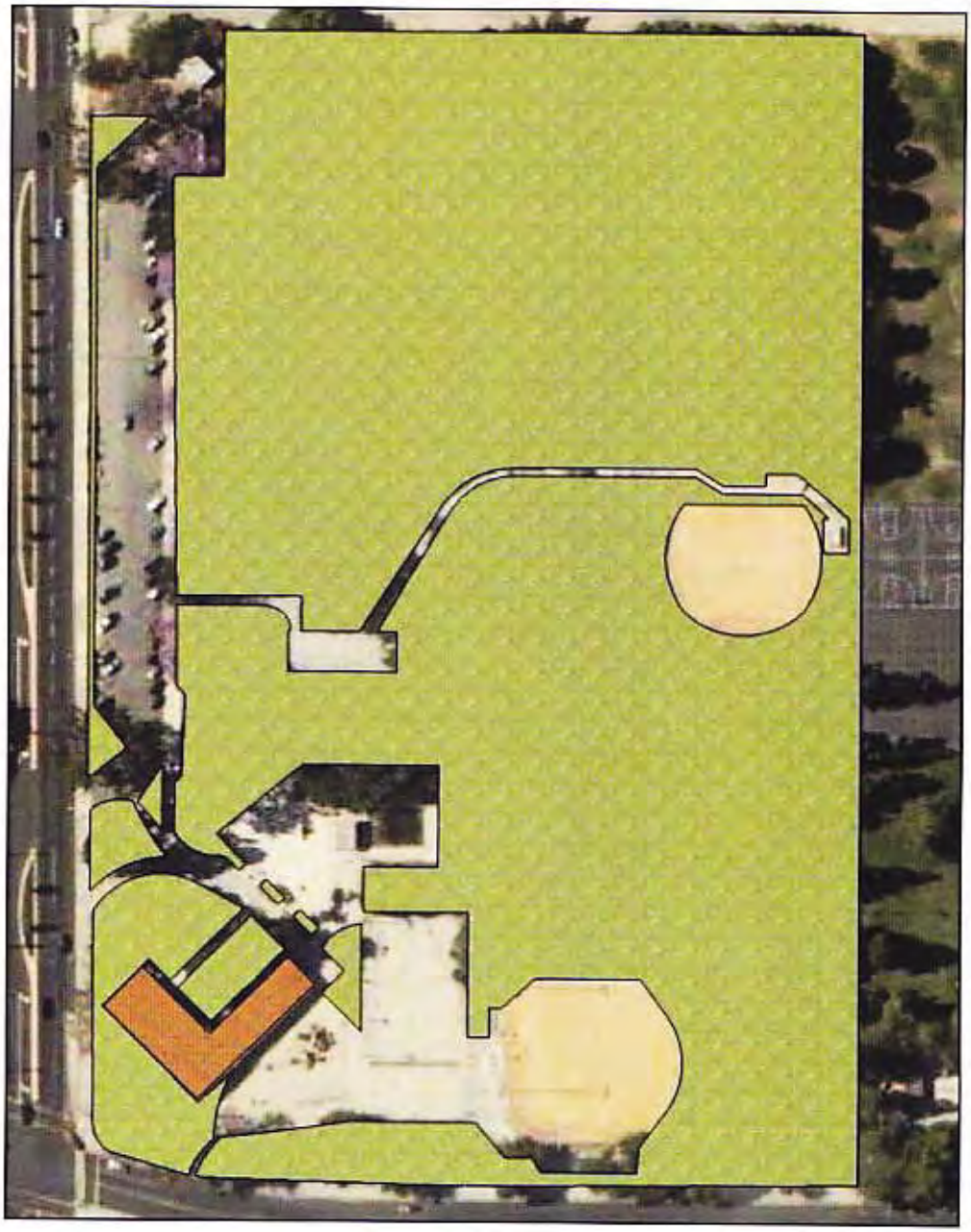
21420 Pioneer Boulevard
Lakewood, CA 90716

Audit Date:	December 4, 2008
Auditor:	Enrique Zanetti
Assistant:	Chris Jackson
Building Area:	7,620 sq ft
Landscape Irrigated Area:	426,719 sq ft
Total Area:	434,339 sq ft

City of Lakewood

Bloomfield Park

21420 Pioneer Boulevard
Lakewood, CA 90716



Building Area: 7,620 sq ft

Landscape Irrigated Area: 426,719 sq ft

Bloomfield Park

December 4, 2008

This is an example of a low rotor. Of the 152 rotors that we audited, 14% were low which causes pooling around the base of the rotor and poor distribution uniformity.

Over 10% of the sprinklers were tipped. Tipped sprinkler heads cause uneven distribution of water.

Here are two examples of arc misalignment. The arc on these rotor heads should be rotated to water the lawn area instead of the sidewalks.

Here is an example of a blocked rotor of 14 blocked rotors we found. This is not only unhealthy for the tree but, inefficient for the uniformity of water being distributed.

Station 5, was battery operated and overspraying onto a hardscape. We recommend either adjusting the radius of throw or downsizing nozzles.

Of the 11 active stations at Controller I which were irrigating large lawn areas, 8 stations were operating at lower than optimum pressure. Check the control valves or downsize the nozzles.

Landscape Data - Active Stations By Controller

Facility: Bloomfield Park	Address: 21420 Pioneer Blvd. Lakewood, CA, 90716	Location: See map	Work Order:

Irrigation Controller Make & Model: Rain Master Sentor II (Controller I)	WBIC?: N	Total Stations: 24	Active Stations: 13	Area Description: Sport Field, sidewaks & recreation area

				Sprinkler Type								Sprinkler Condition								System Condition							Replace Nozzles	Planter Area	Quantity	Notes
Station No.	Microclimate	Plant Material	Plant Density	Sprinkler Make	Rotor	Spray	Stream Rotor	Rotary Nozzle	Bubbler	Micro Spray	Drip	Low	Tipped	Arc Misaligned	Clogged	Leaking	Broken Head	Non-rotating Head	Overspray	Spray Blocked	Effective	Head-Head Spacing	Pressure Reading	High/Low Pressure	Broken Irr. Line	Valve Malfunction	Photograph				
5	H	T Tr	H	H R O	16							2	5	1					2		Y	N	30	L	1		1		S M L		
6	H	T Tr	H	H R O	15							2	1	1							Y	N	25	L			5		S M L		
7	M	T Tr	H	H	4								1								Y	N	45	L			8		S M L		
9	H	S	M	T		17									13						N	N		L					S M L		Many are completely clogged
11	M	T Tr	H	H	10							2	1	1				2			Y	N	25	L					S M L		2 heads are not rotating
12	H	T Tr	H	H	14							3	1								Y	N	30	L					S M L		
13	H	T Tr	H	H O	12											1					Y	N	30	L					S M L		
15	H	T Tr	H	H R O	16								2	1				3			Y	N	40	H			22		S M L		Misting
16	M	T Tr	4	H R O	14							4	2			1					Y	N	50	OK					S M L		
17	H	T Tr	H	H R O	14								1								Y	N	30	L			24		S M L		
19	M	T Tr	H	R	16								1						1	1	Y	Y	20	L			28		S M L		

Reference Codes

Microclimate		Plant Material H/M/L		Density		Sprinkler Make		Area	
H	High	T	Turf	H	High	R	Rainbird	S	25 sq ft
M	Medium	S	Shrubs	M	Medium	T	Toro	M	50 sq ft
L	Low	G	Ground Cover	L	Low	H	Hunter	L	100 sq ft
		M	Mixed			I	Irritrol		
		Tr	Trees			O	Other		

Soil Type		Water Source
Clay		Potable
Loam	O	Recycled
Sand		

Turf Information	
Existing Synthetic Turf:	N
System Information	
Booster Pump:	Y
Pressure Regulator:	Y

Auditor Name: Enrique Zanetti

Auditor Name: Chris Jackson

Time In:

Appointment:

Landscape Data - Active Stations By Controller

Facility: Bloomfield Park	Address: 21420 Pioneer Blvd. Lakewood, CA, 90716	Location: See map	Work Order:

Irrigation Controller Make & Model: Rain Master Sentor II (Controller I)	WBIC?: N	Total Stations: 24	Active Stations: 13	Area Description: Sport Field, sidewaks & recreation area

Station No.	Microclimate	Plant Material	Plant Density	Sprinkler Type								Sprinkler Condition								System Condition							Replace Nozzles	Planter Area	Quantity	Notes
				Sprinkler Make	Rotor	Spray	Stream Rotor	Rotary Nozzle	Bubbler	Micro Spray	Drip	Low	Tipped	Arc Misaligned	Clogged	Leaking	Broken Head	Non-rotating Head	Overspray	Spray Blocked	Effective	Head-Head Spacing	Pressure Reading	High/Low Pressure	Broken Irr. Line	Valve Malfunction	Photograph				
22	M	T Tr	H	R	20								2						3		Y	Y	40	OK			30		S M L		
23	M	T Tr	H	T	1	47	1					8						1			Y	N		OK			33		S M L		Bad Design

Reference Codes

Microclimate		Plant Material H/M/L		Density		Sprinkler Make		Area	
H	High	T	Turf	H	High	R	Rainbird	S	25 sq ft
M	Medium	S	Shrubs	M	Medium	T	Toro	M	50 sq ft
L	Low	G	Ground Cover	L	Low	H	Hunter	L	100 sq ft
		M	Mixed			I	Irritrol		
		Tr	Trees			O	Other		

Soil Type		Water Source
Clay		Potable
Loam	O	Recycled
Sand		

Turf Information	
Existing Synthetic Turf:	N
System Information	
Booster Pump:	Y
Pressure Regulator:	Y

Auditor Name: Enrique Zanetti

Auditor Name: Chris Jackson

Time In:

Appointment:

Landscape Data - Active Stations By Controller

Facility: Bloomfield Park	Address: 21420 Pioneer Blvd., Lakewood, Ca.	Location: See map	Work Order:

Irrigation Controller Make & Model: Manual Valves - Unik (battery operated)	WBIC?: N	Total Stations: 11	Active Stations: 10	Area Description: Sidewalks & planters

				Sprinkler Type								Sprinkler Condition								System Condition										
Station No.	Microclimate	Plant Material	Plant Density	Sprinkler Make	Rotor	Spray	Stream Rotor	Rotary Nozzle	Bubbler	Micro Spray	Drip	Low	Tipped	Arc Misaligned	Clogged	Leaking	Broken Head	Non-rotating Head	Overspray	Spray Blocked	Effective	Head-Head Spacing	Pressure Reading	High/Low Pressure	Broken Irr. Line	Valve Malfunction	Photograph	Replace Nozzles	Planter Area	Quantity	Notes
1	M	T Tr	H	O T		17						5		2							Y	N		OK			35		S M L		A lot of run off. Stations 1 & 2 work at same time
2	M	T Tr	H	O T																	Y	N		OK					S M L		Stations 1 & 2 work at same time
3	M	S T	H	O		8														8	Y	N		OK			36		S M L		
4	M	T Tr	H	T	6																Y	Y	35	OK			37		S M L		
5	M	T Tr	H	O			10							2	1	1			3		Y	Y		H			41		S M L		
6	M	S Tr	H	T		4														4	Y	N		H			42		S M L		2 Planters
7	M	T	H	T		18															Y	N		OK					S M L		
8	M	T Tr	H	H O	15								1			1		1			Y	N	30	OK			43		S M L		
9	H	T Tr	H	H R O	16																Y	N	25	L					S M L		
10	H	T Tr	H	T R O	16							1				1		1			Y	N	40	OK					S M L		
11	M	T Tr	H	H R O	9									1						1	Y	N	35	OK					S M L		

Reference Codes									
Microclimate		Plant Material H/M/L		Density		Sprinkler Make		Area	
H	High	T	Turf	H	High	R	Rainbird	S	25 sq ft
M	Medium	S	Shrubs	M	Medium	T	Toro	M	50 sq ft
L	Low	G	Ground Cover	L	Low	H	Hunter	L	100 sq ft
		M	Mixed			I	Irritrol		
		Tr	Trees			O	Other		

Soil Type		Water Source
Clay		Potable
Loam	O	Recycled
Sand		

Turf Information	
Existing Synthetic Turf:	N
System Information	
Booster Pump:	Y
Pressure Regulator:	Y

Auditor Name: Enrique Zanetti

Auditor Name: Chris Jackson

Time In:

Appointment:

City of Lakewood

Biscailuz Park

2601 Dollar Street
Lakewood, CA 90712

Audit Date:	December 4, 2008
Auditor:	Enrique Zanetti
Assistant:	Chris Jackson
Building Area:	1,304 sq ft
Landscape Irrigated Area:	123,702 sq ft
Total Area:	125,006 sq ft

City of Lakewood

Biscailuz Park

2601 Dollar Street
Lakewood, CA 90712

Building Area: 1,304 sq ft

Landscape Irrigated Area: 123,702 sq ft

Biscailuz Park

December 4, 2008

About 14% of the sprinklers were tipped. Tipped sprinkler heads cause uneven distribution of water.

Here is an example of a rotor with arc misalignment. A total of 34 sprinklers at Biscailuz Park were out of alignment.

Over 25% of the sprinklers at Controller I were found broken. Broken sprinklers should be kept to a minimum with maintenance, these broken sprinklers are creating major water losses.

The above photo shows low sprinkler heads with high water pressure resulting in misting. Misting can be fixed by adding pressure regulators.

This photo shows a low rotor. Low sprinklers produce poor water distribution uniformity and pooling at the base of the sprinkler.

Overspray is often a problem on sidewalks and parkways. We recommend replace the nozzles with strip series nozzle types at stations 4 and 10 Controller I and manual station 5.

Landscape Data - Active Stations By Controller

Facility: Biscailuz Park	Address: 2601 Dollar St., Lakewood, Ca.	Location: See map	Work Order:

Irrigation Controller Make & Model: Aqua Dial 523A (Controller I)	WBIC?: N	Total Stations: 24	Active Stations: 19	Area Description: Field

				Sprinkler Type								Sprinkler Condition								System Condition										
Station No.	Microclimate	Plant Material	Plant Density	Sprinkler Make	Rotor	Spray	Stream Rotor	Rotary Nozzle	Bubbler	Micro Spray	Drip	Low	Tipped	Arc Misaligned	Clogged	Leaking	Broken Head	Non-rotating Head	Overspray	Spray Blocked	Effective	Head-Head Spacing	Pressure Reading	High/Low Pressure	Broken Irr. Line	Valve Malfunction	Photograph	Replace Nozzles	Planter Area	Quantity	Notes
1	H	T	H	HO	3											1			1		Y	Y	40	L			47		S M L		
2	H	TTr	H	HO	2																Y	Y	35	L					S M L		
3	H	TTr	H	HO		30						6	2	2	1	1	10		9		N	Y		OK			67		S M L		
4	H	T	H	T		21							15			2			21		Y	Y		OK			57		S M L		ALL SPRAYS ARE OVERSPRAYING
5	H	T	H	TO		14						11			1	1					Y	Y		OK			58		S M L		LOW PRESSURE AT END OF LINE... BAD DESIGN
6	H	T	H	TO		16						7	3	3			2				Y	Y		H					S M L		ALL SPRAYS ARE OVERSPRAYING
7	H	T	H	HO		14							2			1	12				N	Y		L			80		S M L		3 SPRINKLERS ARE MISSING
8	H	TTr	H	HT	1		3							1		1	1		2		Y	Y	30	L					S M L		BAD DESIGN.. MIXING ROTOR TYPES
9	H	STr	M	O		?																			1	1			S M L		PLANTERS. STATION NOT WORKING
10	H	T	H	TO		42							1	2			28		14		N	Y		L			75		S M L		ALL SPRAYS ARE OVERSPRAYING
12	H	T	H	HO	5							1	2						2		Y	Y	40	L			61		S M L		

Reference Codes

Microclimate		Plant Material H/M/L		Density		Sprinkler Make		Area	
H	High	T	Turf	H	High	R	Rainbird	S	25 sq ft
M	Medium	S	Shrubs	M	Medium	T	Toro	M	50 sq ft
L	Low	G	Ground Cover	L	Low	H	Hunter	L	100 sq ft
		M	Mixed			I	Irritrol		
		Tr	Trees			O	Other		

Soil Type		Water Source	
Clay		Potable	O
Loam	O	Recycled	
Sand			

Turf Information	
Existing Synthetic Turf:	N
System Information	
Booster Pump:	N
Pressure Regulator:	N

Auditor Name: Enrique Zanetti

Auditor Name: Chris Jackson

Time In:

Appointment:

Landscape Data - Active Stations By Controller

Facility: Biscailuz Park	Address: 2601 Dollar St., Lakewood, Ca.	Location: See map	Work Order:

Irrigation Controller Make & Model: Aqua Dial 523A (Controller I)	WBIC?: N	Total Stations: 24	Active Stations: 19	Area Description: Field

				Sprinkler Type								Sprinkler Condition								System Condition										
Station No.	Microclimate	Plant Material	Plant Density	Sprinkler Make	Rotor	Spray	Stream Rotor	Rotary Nozzle	Bubbler	Micro Spray	Drip	Low	Tipped	Arc Misaligned	Clogged	Leaking	Broken Head	Non-rotating Head	Overspray	Spray Blocked	Effective	Head-Head Spacing	Pressure Reading	High/Low Pressure	Broken Irr. Line	Valve Malfunction	Photograph	Replace Nozzles	Planter Area	Quantity	Notes
13	H	T	H	TO		28						11	2	6	1		1				Y	Y		H			51		S M L		
15	H	T Tr	H	HO	3									1		1					Y	Y	40	L					S M L		
17	H	T Tr	H	HO	8									1		2	1		2		Y	Y	30	L			53		S M L		
18	H	T	H	HO	6									2		1					Y	Y	30	L			59		S M L		
19	H	T	H	HO	1											1		1			Y	N	40	L					S M L		
20	H	T Tr	H	HO	4									1		1			2		Y	Y	40	L			46		S M L		
21	H	T Tr	H	HO	5								1	2						2	Y	Y	35	L					S M L		MIXED SPRINKLERS
22	H	T Tr	H	RO	4								1	2					1		Y	Y	35	L			69		S M L		

Reference Codes

Microclimate		Plant Material H/M/L		Density		Sprinkler Make		Area	
H	High	T	Turf	H	High	R	Rainbird	S	25 sq ft
M	Medium	S	Shrubs	M	Medium	T	Toro	M	50 sq ft
L	Low	G	Ground Cover	L	Low	H	Hunter	L	100 sq ft
		M	Mixed			I	Irritrol		
		Tr	Trees			O	Other		

Soil Type		Water Source	
Clay		Potable	O
Loam	O	Recycled	
Sand			

Turf Information	
Existing Synthetic Turf:	N
System Information	
Booster Pump:	N
Pressure Regulator:	N

Auditor Name: Enrique Zanetti

Auditor Name: Chris Jackson

Time In:

Appointment:

Landscape Data - Active Stations By Controller

Facility: Biscailuz Park	Address: 2601 Dollar St., Lakewood, CA, 90712	Location: See map	Work Order:

Irrigation Controller Make & Model: Manual Stations	WBIC?: N	Total Stations: 5	Active Stations: 5	Area Description: Field

				Sprinkler Type								Sprinkler Condition								System Condition										
Station No.	Microclimate	Plant Material	Plant Density	Sprinkler Make	Rotor	Spray	Stream Rotor	Rotary Nozzle	Bubbler	Micro Spray	Drip	Low	Tipped	Arc Misaligned	Clogged	Leaking	Broken Head	Non-rotating Head	Overspray	Spray Blocked	Effective	Head-Head Spacing	Pressure Reading	High/Low Pressure	Broken Irr. Line	Valve Malfunction	Photograph	Replace Nozzles	Planter Area	Quantity	Notes
1	M	T Tr	H	T		11							2	3	3	1			2		Y	Y		L					S M L		
2	H	S	H	T O		7							1	1					1	3	Y	Y		H					S M L		
3	H	T Tr	H	H T O	6								1			1		1			Y	Y	35	L					S M L		
4	H	T	H	H O	5							1	2	5					1		Y	Y	35	L					S M L		
5	M	S	L	O		24						1	2	2	3				24	2	Y	Y		H					S M L		

Reference Codes

Microclimate		Plant Material H/M/L		Density		Sprinkler Make		Area	
H	High	T	Turf	H	High	R	Rainbird	S	25 sq ft
M	Medium	S	Shrubs	M	Medium	T	Toro	M	50 sq ft
L	Low	G	Ground Cover	L	Low	H	Hunter	L	100 sq ft
		M	Mixed			I	Irritrol		
		Tr	Trees			O	Other		

Soil Type		Water Source	
Clay		Potable	O
Loam	O	Recycled	
Sand			

Turf Information	
Existing Synthetic Turf:	N
System Information	
Booster Pump:	N
Pressure Regulator:	N

Auditor Name: Enrique Zanetti

Auditor Name: Chris Jackson

Time In:

Appointment:

City of Lakewood

Candle Verde Park

6300 Candle Wood Street
Lakewood, CA 90713

Audit Date:	November 19, 2008
Auditor:	Kelly Takai
Assistant:	Kosta Duncan
Landscape Irrigated Area:	87,705 sq ft
Total Area:	87,705 sq ft

City of Lakewood

Candle Verde Park

6300 Candle Wood Street
Lakewood, CA 90713

Landscape Irrigated Area: 87,705 sq ft

Landscape Data - Active Stations By Controller

Facility: Candle Verde Park	Address: 6300 Candlewood St., Lakewood, CA 90713	Location: See map	Work Order:

Irrigation Controller Make & Model: Rain Master Sentar	WBIC?: N	Total Stations: 12	Active Stations: 9	Area Description: Field

				Sprinkler Type								Sprinkler Condition								System Condition							Replace Nozzles	Planter Area	Quantity	Notes
Station No.	Microclimate	Plant Material	Plant Density	Sprinkler Make	Rotor	Spray	Stream Rotor	Rotary Nozzle	Bubbler	Micro Spray	Drip	Low	Tipped	Arc Misaligned	Clogged	Leaking	Broken Head	Non-rotating Head	Overspray	Spray Blocked	Effective	Head-Head Spacing	Pressure Reading	High/Low Pressure	Broken Irr. Line	Valve Malfunction	Photograph				
1	H	T	H	H	10							1	4			1					Y	Y		OK			21		S M L		
2	H	T	H	H	9							2									Y	Y		OK			22		S M L		
4	H	T	H	H	5																Y	Y		OK					S M L		
5	H	T	H	H	7							4	1								Y	Y		OK			24		S M L		
6	H	T	H	H	8								1	3					1		Y	Y		OK			25		S M L		
7	H	T	H	H	7							2	3	4	1	1					Y	Y		OK			27		S M L		
9	L	T Tr	H	H	4							4				1	1			4	Y	Y		OK					S M L		
10	M	T Tr	H	H	2							2									Y	Y		OK			28		S M L		
11	H	T	H	H R	7	5						1			1						Y	Y		OK			32		S M L		

Reference Codes

Microclimate		Plant Material H/M/L		Density		Sprinkler Make		Area	
H	High	T	Turf	H	High	R	Rainbird	S	25 sq ft
M	Medium	S	Shrubs	M	Medium	T	Toro	M	50 sq ft
L	Low	G	Ground Cover	L	Low	H	Hunter	L	100 sq ft
		M	Mixed			I	Irritrol		
		Tr	Trees			O	Other		

Soil Type		Water Source	
Clay		Potable	O
Loam	O	Recycled	
Sand			

Turf Information	
Existing Synthetic Turf:	N
System Information	
Booster Pump:	N
Pressure Regulator:	N

Auditor Name: Kelly Takai

Auditor Name: Kosta Duncan

Time In:

Appointment:

City of Lakewood

Cherry Cove Park

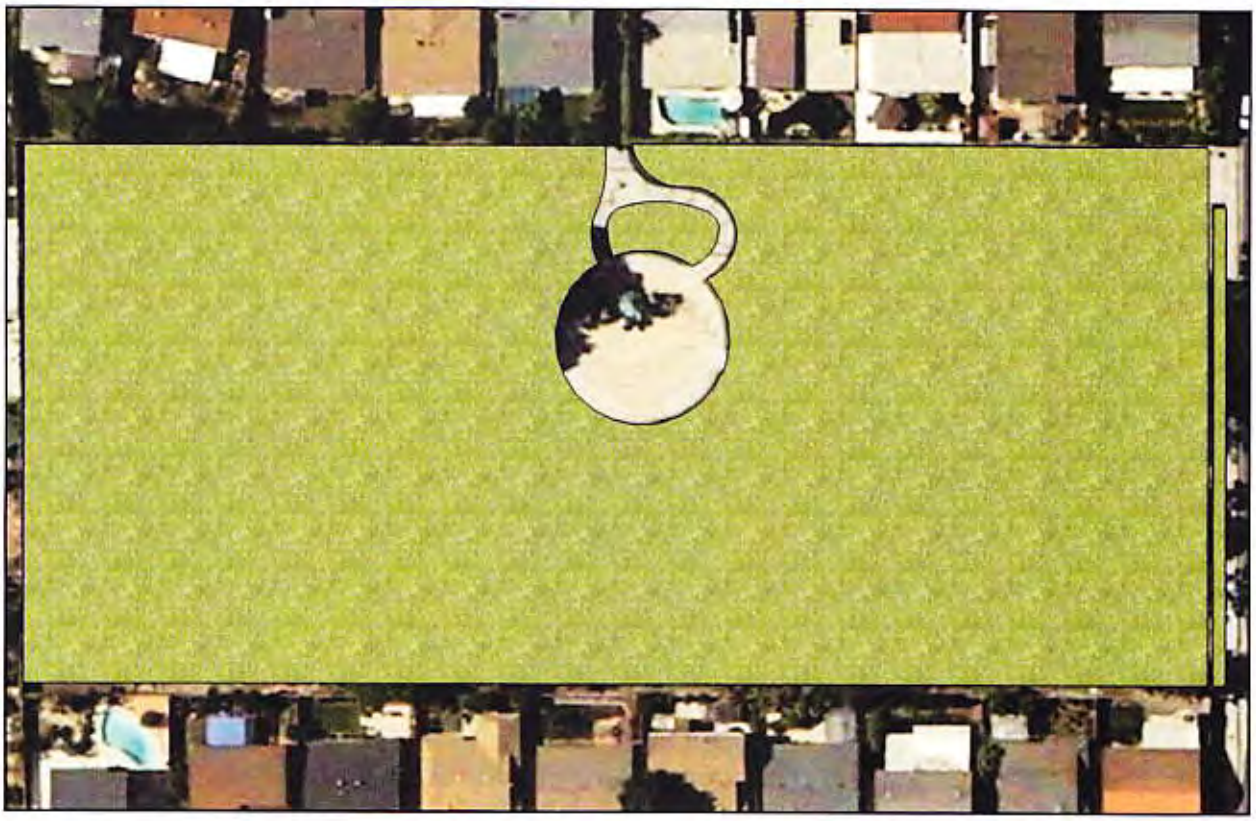
5149 Meadow Wood Avenue
Lakewood, CA 90712

Audit Date:	December 19, 2008
Auditor:	Kelly Takai
Assistant:	Kosta Duncan
Landscape Irrigated Area:	119,374 sq ft
Total Area:	119,374 sq ft

City of Lakewood

Cherry Cove Park

5149 Meadow Wood Avenue
Lakewood, CA 90712



Landscape Irrigated Area: 119,374 sq ft

Landscape Data - Active Stations By Controller

Facility: Cherry Cove Park	Address: 5149 Meadow Wood Ave., Lakewood, CA 90712	Location: See map	Work Order:

Irrigation Controller Make & Model: Aqua-Dial	WBIC?: N	Total Stations: 12	Active Stations: 11	Area Description: Field

				Sprinkler Type								Sprinkler Condition								System Condition										
Station No.	Microclimate	Plant Material	Plant Density	Sprinkler Make	Rotor	Spray	Stream Rotor	Rotary Nozzle	Bubbler	Micro Spray	Drip	Low	Tipped	Arc Misaligned	Clogged	Leaking	Broken Head	Non-rotating Head	Overspray	Spray Blocked	Effective	Head-Head Spacing	Pressure Reading	High/Low Pressure	Broken Irr. Line	Valve Malfunction	Photograph	Replace Nozzles	Planter Area	Quantity	Notes
1	H	T	H	R		22							7	2	1	1					Y	Y		OK					S M L		
2	L	T Tr	H	T	3	1	17					1			1			1			Y	Y		OK			34		S M L		Mixed heads
3	L	T Tr	H	T			21					5			2						Y	Y		OK			35		S M L		
4	L	T Tr	H	T		17	2						2			1					Y	Y		OK					S M L		Mixed heads
5	H	T	H	T	6													1	1		Y	Y		OK			36		S M L		
6	M	T Tr	H	T	1		16					8	1							1	Y	Y		OK					S M L		Mixed heads
7	M	T Tr	H	T	9							9				1				5	Y	Y		OK			38		S M L		
8	H	T	H	T	6							6	2							1	Y	Y		OK					S M L		
9	H	T	H	T	6							6									Y	Y		OK					S M L		
10	M	T	H	T	8							7	1								Y	Y		OK					S M L		
11	H	T	H	T	3							2	1							1	Y	Y		OK					S M L		

Reference Codes

Microclimate		Plant Material H/M/L		Density		Sprinkler Make		Area	
H	High	T	Turf	H	High	R	Rainbird	S	25 sq ft
M	Medium	S	Shrubs	M	Medium	T	Toro	M	50 sq ft
L	Low	G	Ground Cover	L	Low	H	Hunter	L	100 sq ft
		M	Mixed			I	Irritrol		
		Tr	Trees			O	Other		

Soil Type		Water Source	
Clay		Potable	O
Loam	O	Recycled	
Sand			

Turf Information	
Existing Synthetic Turf:	N
System Information	
Booster Pump:	N
Pressure Regulator:	N

Auditor Name: Kelly Takai

Auditor Name: Kosta Duncan

Time In:

Appointment:

Lakewood Indoor Details

Urinals

Recommendation	Number of Replacements Recommended	Valve Mfg	Valve Concealed	Sensor	Bowl Mfg	Trap	Urinal Size	Height Bottom to Floor	Spud from top	Spud from back	GPF	Location
Replace old 1.5+ GPF with Ultra Low Volume models	1	Sloan	No	No	Kohler	2"	38" X 18"	-	9.5"	3.5"	2	Biscailuz Park, floor 1, Public, Male(1)
	1	Sloan	No	No	Crane	2"	24" X 18.5"	18"	9.5"	2.5"	3.5	Simon Bolivar Park, floor 1, Public, Male(1)
	1	Sloan	No	No	Crane	2"	24" X 18.5"	22.5"	9.5"	3"	5.5	Simon Bolivar Park, floor 1, Public, Male(1)
Upgrade old 1.0 GPF with Ultra Low Volume models	1	Sloan	No	No	AmStd	1.5"	22" X 14"	17.5"	11.5"	2.5"	1	Bloomfield Park, floor 1, Public, Male(1)
	1	Sloan	No	No	AmStd	1.5"	22" X 14"	23"	11.5"	2.5"	1	Bloomfield Park, floor 1, Public, Male(1)
	2	Sloan	No	No	AmStd	2"	18" X 11"	17"	10"	3"	1	Simon Bolivar Park, floor 1, Pool, Male(2)
	2	Sloan	No	No	AmStd	2"	18" X 11"	24"	11"	3"	1	Simon Bolivar Park, floor 1, Pool, Male(2)
Total Urinals	**9**											

Toilets

Recommendation	Number of Replacements Recommended	Tank or Valve	Valve Mfg	Valve Concealed	Sensor	Bowl Type	Bowl Tank Mfg	Mounted	Rough In	ADA	GPF	Location
Replace old 3.5+ GPF with High Efficiency, Flush-valve, Wall-mounted Model	1	Valve	Sloan	No	No	Elongated	Crane	Wall	-	Yes	5	Biscailuz Park, floor 1, Public, Female(1)
	1	Valve	Sloan	No	No	Elongated	Crane	Wall	-	Yes	3.5	Simon Bolivar Park, floor 1, Public, Female(1)
	2	Valve	Sloan	No	No	Elongated	AmStd	Wall	-	No	3.5	Simon Bolivar Park, floor 1, Public, Female(2)
Upgrade old 1.6 GPF with High Efficiency, Flush-valve, Wall-mounted Model	1	Valve	Sloan	No	No	Elongated	AmStd	Wall	-	No	1.6	Biscailuz Park, floor 1, Public, Female(1)
	1	Valve	Sloan	No	No	Elongated	AmStd	Wall	-	Yes	1.6	Simon Bolivar Park, floor 1, Public, Male(1)
	1	Valve	Sloan	No	No	Elongated	AmStd	Wall	-	Yes	1.6	Simon Bolivar Park, floor 1, Pool, Male(1)
	1	Valve	Sloan	No	No	Elongated	AmStd	Wall	-	Yes	1.6	Simon Bolivar Park, floor 1, Pool, Female(1)
	3	Valve	Sloan	No	No	Elongated	AmStd	Wall	-	No	1.6	Simon Bolivar Park, floor 1, Pool, Male(3)
	5	Valve	Sloan	No	No	Elongated	AmStd	Wall	-	No	1.6	Simon Bolivar Park, floor 1, Pool, Female(5)
Upgrade old 1.6 GPF with High Efficiency, Flush-valve, Floor-mounted Model	1	Valve	Sloan	No	No	Elongated	AmStd	Floor	12	Yes	1.6	Bloomfield Park, floor 1, Public, Male(1)
	1	Valve	Sloan	No	No	Elongated	AmStd	Floor	12	Yes	1.6	Bloomfield Park, floor 1, Public, Female(1)
	1	Valve	Sloan	No	No	Elongated	AmStd	Floor	14	No	1.6	Bloomfield Park, floor 1, Public, Male(1)
	2	Valve	Sloan	No	No	Elongated	AmStd	Floor	14	No	1.6	Bloomfield Park, floor 1, Public, Female(2)
Total Toilets	**21**											

ATTACHMENT 14

LAKEWOOD Connect
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eMagazine
www.lakewoodcity.org/contactus
562-866-9771 extension 2140

Lakewood, California Thursday, May 21, 2015

City service information for Memorial Day

Lakewood City Hall will be closed for the Memorial Day holiday on Monday, May 25. On that day, trash service will not be interrupted. There will be no street sweeping and no make-up sweep. There will be no DASH Transit service.

TRAFFIC ALERT: Residents not attending Memorial Day ceremonies at Del Valle Park may want to avoid Woodruff Avenue between Del Amo Boulevard and Carson Street from 10:00 a.m. until 2:30 p.m. and from 7:00 p.m. until 9:30 p.m.

Residents can make a routine service request by calling 562-866-9771 extension 2140, or click to www.lakewoodcity.org/services

Landscaping photos, videos and plans

Lakewood residents can benefit from looking at the water-saving ideas of other Lakewood and Long Beach homeowners. Photographs, video and plan samples are online.

Also featured is CityTV's video on

Two Memorial Day events this year!

Memorial Day will be extra special this year. The city is organizing two events on Memorial Day in an effort to spread out the audience and try to create the best viewing experience for the most people possible. More

Pre-summer swim opportunities start next week

Lakewood summer activities are coming soon to Mayfair Pool. Swim lessons start Tuesday, May 26. Walk-in registration at Mayfair Pool will take place from 1:00 p.m. to 4:00 p.m. on Saturday, May 23.

Water Aerobics: Shallow Water Aerobics and Aqua Zumba classes start May 26 at Mayfair Pool. Sign up at www.lakewoodcity.org/eCatalog or call 562-866-9771, extension 2408. More

Save 70% on an electric mower on May 23

The South Coast Air Quality Management District (SCAQMD) Electric Lawn Mower Exchange Program is underway with huge discounts for local residents. You can help clean the

gardening tips and design ideas. More

air by exchanging an old, operable gasoline-powered lawn mower and purchasing a new electric cordless lawnmower for a discount as deep as 70% off retail. This year, you have six models to choose from, with your cost ranging from $100 to $250. Click for brochure showing available mowers. The next mower exchange event happening near Lakewood is in Anaheim on Saturday, May 23. Space is limited. You must register in advance. Click for the registration page. More

Rebates go below the surface

The City of Lakewood has expanded its "Swiss Army Knife" of rebate offers to include the installation of "subsurface irrigation systems." They can reduce landscape watering needs up to 25 percent! More

Lakewood Online

News Briefs & Events

Assembly Member hosting community coffee

Assembly Member Anthony Rendon will host a Legislative Update and Community Coffee on Saturday, June 6 from 9:00 a.m. to 10:00 a.m. Attendees will hear firsthand about the work Assembly Member Rendon is doing in Sacramento. He chairs the Utilities and Commerce Committee and was elected to the Legislature in November of 2012 to represent the 63rd Assembly District. The district includes the cities and communities of Bell, Cudahy, Hawaiian Gardens, Lakewood, North Long Beach, Lynwood, Maywood, Paramount, and South Gate.

For additional information call 562-529-3250. More

Shelters fill in spring: Adopt a pet!

This is a great time to consider pet adoption. Over 25,000 animals per year go through the Southeast Area Animal Control Authority in Downey, which provides animal care services to Lakewood and area cities. Click to see SEAACA's featured pets page and click to see CityTV's monthly pets video.

In the spring, the number of stray and unwanted animals grows in the community and, sadly, the population increases

in animal shelters. It's a good time to consider adopting a new pet and bringing a four-legged friend home from the shelter to provide joy to your family. More

Lakewood Youth Sports coaches help

LYS kids

Volunteer coaches are needed for baseball, softball and T-ball teams for the summer season and for the coming fall season at all Lakewood parks. Although moms and dads of players make great coaches, it's not necessary to have a child playing to enjoy the volunteer experience.

No coaching experience is necessary. City staff will provide the appropriate training. Fill out our online interest form or inquire at any Lakewood park for complete details or call 562-866-9771, extension 2408. More

LASD is hiring

The Los Angeles County Sheriff's Department (LASD) has begun their 2015 hiring campaign. LASD is the largest sheriff's department in the country and offers opportunities in patrol, custody, court services, transit policing, investigations, cybercrimes, SWAT, search and rescue, mounted enforcement, marine enforcement, and many other unique and specialized assignments.

The many career opportunities available coupled with the Department's large jurisdictional area and responsibilities, truly makes the Los Angeles County Sheriff's Department unique in the law enforcement industry. More

Bow Wow and Meow Days returns with new features

Lakewood's summer pet care tradition returns Wednesday, June 3 with a Bow Wow and Meow Day event from 6:00 p.m. until 8:00 p.m. Another Bow Wow and Meow Day on Sunday, July 19 will include a new Pet Fair featuring on-site spay and neutering services.

The June 3 event features Bow Wow and Meow Day staples of convenient pet licensing, vaccinations at a discount and micro chipping. This convenient one-stop event is intended to help pet owners with pet licensing and care needs. Flea control products and information regarding low-cost spaying/neutering and health care for dogs and cats will also be on hand. More

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eMagazine
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562-866-9771 extension 2140

Lakewood, California June 3, 2015

Pre-summer swim opportunities

Lakewood summer swimming activities are happening at

Memorial Day: Photos, video and time-lapse movie

Lakewood's tradition of bringing community life to pictures and video was evident at this year's special Memorial Day.

The Lakewood Community Gallery features photos of the morning and evening Memorial Day events that saw an estimated 7,000 guests commemorate Lakewood's newly renovated Veterans Memorial Plaza and honor the men and women who have died serving our nation. At the gallery, you can download, email or print photos for free.

Lakewood CityTV compiled video coverage of the entire morning event, which can be viewed here. It can also be viewed on channel 31 on Time Warner and Verizon FiOS. Click here for the channel's schedule and live stream.

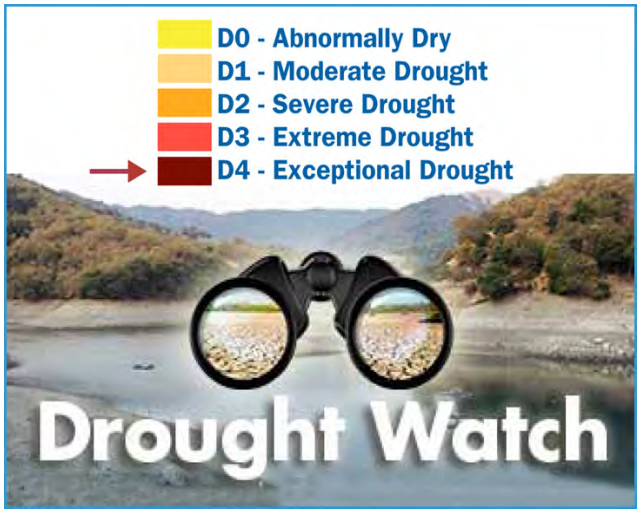
A special time-lapse video offers a look at the Del Valle jet's return and assembly. It then goes on to show both special Memorial Day events from its unique time-lapse perspective. Click for special time-lapse segment.

Two-days-per-week watering in effect now

The state government has imposed new requirements on local communities to further reduce water use, with each community being given a specific target for conservation based on its per capita use of water.

Mayfair Pool. Swim lessons, water aerobics, shallow water aerobics and "Aqua Zumba" are available.

Sign up online or call 562-866-9771, extension 2408. More



Lakewood was told it must reduce its community water use by 20% from 2013 levels. If communities don't reach their targets, the state will impose its own tougher water rules or fines of up to $10,000 a day on the community.

To help Lakewood reach its target, the city has approved new rules that reduce and, for the first time in decades, specifically identify the days each week that Lakewood water customers can water their yards. Only two days a week of watering (for 10 minutes per day per zone of a yard) will now be allowed during the summer months of May through September. The two specific days of watering will be a household's trash day and then three days later. For example, if a resident's trash day is Friday, they can water on Friday and then on Monday. Watering is limited to the cooler hours before 8:00 a.m. or after 8:00 p.m. to reduce water loss through evaporation. Watering days for businesses will conform to the residential trash collection day for that neighborhood, which can be found here. More

Shelters fill in spring and summer: Adopt a pet!

This is a great time to consider pet adoption. Over 25,000 animals per year go through the Southeast Area Animal Control Authority in Downey, which provides animal care services to Lakewood and area cities. Click to see SEAACA's featured pets page and click to see CityTV's monthly pets video.

Lakewood Online

News Briefs & Events

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For additional information call 562-529-3250. More

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eMagazine
www.lakewoodcity.org/contactus
562-866-9771 extension 2140

Lakewood, California Wednesday, July 8, 2015

Free water-wise classes start this Saturday!

Take one or all six. Make the most of your garden. Learn how to save water!

Converting yards into drought-resistant landscapes is one of the most effective steps homeowners can take to save water. The Water Replenishment District is offering free water-wise "eco gardener" classes to help residents save water and improve their gardens.

Topics include irrigation, drip and sprinkler care, best horticultural practices, design tips, and drought-tolerant and native plants. The classroom style programs include PowerPoint presentations and some demonstration.

Attendees will receive instructive handouts free of charge. The comprehensive materials are specific to each of the workshops.

Summer 2015 class dates

To RSVP for a class call 562-866-9771, extension 2408; or register online at www.lakewoodcity.org/eCatalog

Assemblyman honors author of 'The Boys of Del Valle Park'

Lakewood's Dennis Lander receives award from Assemblyman Anthony Rendon

Assemblyman Anthony Rendon (D-Lakewood) recently honored Lakewood resident Dennis Lander (on right in photo) as the 2015 Veteran of the Year for the 63rd Assembly District. "Dennis not only served our country heroically in Vietnam but has been a leading advocate for remembering the sacrifices of our fallen troops," Rendon said in Sacramento on June 24. "Dennis is a treasure of our community and I am proud to honor him as Veteran of the Year."

A veteran of the U.S. Air Force, Lander is author of "The Boys of Del Valle Park," a poem about the young Lakewood men who gave their lives in the armed forces during the Vietnam War. The poem gained popularity when it was published in the Long Beach Press-Telegram on Memorial Day 1988 and is now recited annually during Lakewood's Memorial Day ceremony and is permanently inscribed on the city's veterans memorial at Del Valle Park. More

Low-cost spay and neutering this Sunday

By reservation, pets can be fixed at the Sunday, July 12 event

An expanded Bow Wow and Meow Day event this weekend includes a new Pet Fair featuring on-site spay and neutering services by reservation at 855-499-5829.

and use the course #'s below.

Saturday, July 11
Eco Gardening Concepts
Burns Community Center #40247

Saturday, July 18
Edible Gardening for Beginners
Weingart Senior Center #40248

Saturday, July 25
Garden Design Features; Burns Community Center #40249

Saturday, Aug 1
Drought Tolerant Plants at the Burns Community Center #40250

Saturday, Aug 8
Drip & Sprinkler Care at the Burns Community Center #40251

Saturday, Aug 15
Eco Garden Care at the Weingart Senior Center #40252

More

The day will also include staples like pet licensing, vaccinations at a discount and micro chipping. This convenient one-stop event is intended to help pet owners with pet licensing and care needs. Flea control products and information regarding low-cost spaying/neutering and health care for dogs and cats will be on hand too. More

Free emergency-prep workshop

In a single evening, get started on keeping your family safe

Lakewood's free "Survive for 7" workshop returns with a one-evening "jump start" for emergency preparedness efforts. The session educates residents about actions they can take to protect their family and teaches skills needed to survive in the first week following a catastrophe. Learn more at www.lakewoodcity.org/7days.

The free program is scheduled for Wednesday, July 15 from 6:00 p.m. at the Burns Community Center adjacent to Mayfair Park, 5510 Clark Avenue. Register at www.lakewoodcity.org/eCatalog. The program is course #39567. Call 562-866-9771, extension 2408 for additional information. More

Orange County Fair/ Beatles tribute concert trip

$38 fee includes fair admission, concert and bus transportation on 8/1

Lakewood's travel program is heading to the O.C. Fair to celebrate their 125th Anniversary. This year's theme is "One Big Party" and on August 1 the fair celebrates with The Fab Four: America's Ultimate Beatles Tribute Band playing in the Pacific Amphitheatre. Click for the O.C. Fair's official photo gallery.

The cost of this special trip is only $38 and the fee includes admission to the fair, the concert and bus transportation. The bus leaves Burns Community Center, 5510 Clark Avenue, promptly at 2:30 p.m., so please arrive by 2:00 p.m. An adult must accompany children of all ages. Register on www.lakewoodcity.org/eCatalog with class #39262 by July 20. For questions concerning trip details, call 562-924-0149. More

Lakewood Online

ATTACHMENT 15

LAKEWOOD Living
5050 Clark Avenue
Lakewood, CA 90712

**** ECRWSS

Residential Customer

Patriot Day commemoration

Del Valle Park, Friday, September 11

Lakewood has commemorated Patriot Day every year since the tragic events of 9/11/2001. City residents stop to remember and honor those lost in the terrorist attacks on our nation and those public safety officers and military personnel who are still on the front lines in the struggle against terrorism.

This year's Patriot Day commemoration will take place on Friday, September 11 from 6:00 p.m. to 8:00 p.m. in the concert grove at Del Valle Park (Woodruff Avenue at Arbor Road).

A concert of patriotic music will be performed by the 300th Army Band of Bell, CA and the Golden Sands Chorus of Sweet Adeline's International, Lakewood's award-winning women's chorus.

Keynote remarks will be provided by Los Angeles County Sheriff Jim McDonnell.

The event starts with a stirring presentation of American flags by hundreds of scouts and youth from the Lakewood area. A memorial candle-lighting and moment of silence help bring the memorable evening to a close.

Parking will be at a premium around Del Valle Park. Those who live near the park are encouraged to walk to the event. Parking will be available at MacArthur Elementary School (enter from Centralia Street).

- Food for sale will be provided by the Super Mex Catering Truck and Mr. B's Kettle Corn.
- Bring a blanket or low-rise lawn chair for seating.
- Dogs and alcohol are prohibited at all city parks.

For more information, call 562-866-9771, extension 2408.

September 2015 • Volume 37 No. 5

LAKEWOOD Living

News from the City of Lakewood
www.lakewoodcity.org
City Hall: (562) 866-9771

City budget gets updated

Park and water projects added

In June of last year, the Lakewood City Council passed a $135 million balanced budget covering two fiscal years, from July 1, 2014 to June 30, 2016. On June 23 of this year, the council carried out a review at the mid-point of the two-year plan and decided to add a park project--a new playground for Del Valle Park--and several water-related projects, including drought-tolerant landscaping for roadway medians.

Highlights include:

- **Keeping Lakewood safe.** Lakewood will continue to make the extra investments that make it one of the safest communities in the region.

Lakewood will remain one of the few local cities to dedicate the resources to lift fingerprints from even non-violent crime scenes. Lakewood's team of Special Assignment Officers (see photo at upper right), who handle hot-spot issues, will continue, as will special Sky Knight helicopter support.

The city will maintain its investment in the license plate reading cameras of the Advanced Surveillance and Protection System, which has enabled the Sheriff's Department to identify and arrest dozens of criminals driving stolen or wanted vehicles in Lakewood.

Adding to these public safety steps are the efforts of Lakewood residents who are part of one of the largest Neighborhood Watch programs in the region.

- **Enhancing parks and community centers.** Del Valle Park's playground had to be removed earlier this year to make room for the expanded Veterans Memorial Plaza with its memorial bricks and renovated jet plane (see middle photo). In keeping with the theme of the veterans plaza, the new playground will have a theme of planes and aviation. Construction is expected to be completed by early 2016. The council also approved funding for a new elevator and other improvements to the Burns Community Center (see photo at bottom), used by many Lakewood seniors and others.
- **Maintaining good infrastructure.** Following on the heels of successfully completing the repaving of 100% of all residential streets in 2013, Lakewood will continue with the repaving of major roadways that need more frequent attention. In the coming fiscal year, portions of Woodruff Ave. and Del Amo Blvd. will get repaved.

Lakewood will also continue modernizing the city water system so that it remains safe and reliable. Several miles of watermains will be upgraded, and a well and water treatment plant will be renovated. An increase to water rates of $6.38 a month for the average customer was approved to continue the modernization work. However, residents who reduce their water use through conservation will see a smaller increase or none at all. Lakewood water rates remain in the middle of those charged throughout the region.

- **Dealing with the drought.** The council approved work to begin redesigning the city's roadway medians to make them drought-tolerant and have them absorb stormwater runoff from the roadway. The city will also seek full funding from Caltrans for projects to safely irrigate Mayfair Park and Bolivar Park using stormwater runoff. These projects hold the promise of making Lakewood's community landscaping less vulnerable to drought and more environmentally sustainable.

Continues on flap

After-School Activity Zone

Free at parks for school-age children

Lakewood's After-School Activity Zone is a free drop-in program for school-age children and preteens. City parks offer the after-school activities Monday to Friday from 3:00 p.m. to 5:00 p.m. beginning Monday, August 31.

Kids are provided with playground games, arts and crafts, and homework help. Parents can be assured that their children are properly supervised in a safe and creative environment. Each park has its own schedule of programs and activities.

The After-School Activity Zone closes at 5:00 p.m. weekdays. But there is supervision at all city parks, beginning on August 31, on weekdays from 3:00 p.m. to 6:00 p.m., on Saturdays from 9:00 a.m. to 6:00 p.m., and on Sundays and school holidays from 12 noon to 6:00 p.m. Starting November 1, supervision hours end at 5:00 p.m. for the winter season.

Teens have the option of using the Lakewood Youth Center at Del Valle Park or the Teen Resource Center at Bloomfield Park as their afternoon hangout. Both centers have computers, filtered Internet access for homework, game tables and video game systems.

For more information, call city hall at 562-866-9771, extension 2408 or go to **www.lakewoodcity.org/recreation**.

Helping our kids: Lakewood Education Foundation

Thanks to generous donations from Lakewood residents and businesses, the Lakewood Education Foundation (LEF) has been able to give grants for hundreds of classroom improvement projects in Lakewood schools since 2003. This shows the importance that Lakewood residents and businesses place on our local schools…and the trust they place in LEF to select worthy projects.

In 2014, 106 Lakewood school projects received grants totaling $42,325! The grants went to classroom projects in each of the public school districts in Lakewood as well as St. Pancratius School and Bethany Lutheran School.

LEF is a non-profit agency operated solely by local volunteers and, therefore, has low overhead costs.

In 2014, many grants were for tablets that allow teachers to control slide presentations while they walk around their classrooms and interact with students. Grants also covered science equipment; books of all kinds and reading levels; art and PE supplies; a new theatre stage for Mayfair Middle School; and educational field trips.

You can donate by making out a check to the Lakewood Education Foundation and mailing it to LEF, c/o Lakewood City Hall, 5050 Clark Avenue, Lakewood, CA 90712. Donations are tax deductible.

For information about LEF's Columbus Day golf tournament, including sponsorship opportunities, call 562-496-3559 or 562-866-9771, extension 2404. See a video and learn more at **www.lakewoodcity.org/LEFvideo**.

Back to school – *safely*

Drivers and students need to be careful

Lakewood's back-to-school effort has four elements: (1) Suggested Route to School maps, (2) classroom instruction, (3) Sheriff's traffic enforcement and (4) safety reminders for the public.

Suggested Route to School maps shows the location of traffic signals, stop signs and crossing guards. Suggested Route to School maps and other safety tips for students are at **www.lakewoodcity.org/backtoschool**.

Safety tips for children:

- Always stop, look all four ways and listen before crossing the street.
- Cross streets only at corners and crosswalks, not between parked cars.
- Walk or ride with a group of people; there is safety in numbers.
- When walking on sidewalks, look out for cars pulling out of driveways.
- Always wait for a crossing guard to control traffic before starting to cross the street.
- Bicycles must be ridden on the right side of the road, in the direction of traffic.
- Wear a secure-fitting, safety-approved helmet when riding a bicycle, skateboard, scooter, or skates. It's for your safety…and it's the law!

Safety tips for drivers:

- Don't let your children exit a car on the traffic side of your vehicle. Be aware, drivers can be cited for unsafely loading or unloading children near schools.
- Double parking for a quick drop-off is very hazardous for small children, who are invisible behind an SUV or a van until they dart in front of oncoming traffic.
- The only safe way to drop off your youngsters is to pull up to the curb in front of the school or at a safe location where youngsters can walk to the end of the block and cross to school through an intersection controlled by a stop sign, signal or crossing guard.
- Reduce vehicle speed to 25 mph or slower when driving in school zones.

Good time to remember bike safety

Back-to-school season should remind us that cyclists and motorists need to share the road.

Key points for drivers:

- Pass a bicyclist as you would a slow-moving vehicle. Pass with caution, and only when safe. Do not squeeze the bicyclist off the road. If road conditions and space permit, allow clearance of at least three feet when passing a bicyclist.
- Look carefully for bicyclists before opening doors next to moving traffic.
- Do not overtake a bicyclist just before making a turn. Merge first, then turn. Most bicyclists are aware of basic safety, but the basics are not enough.

Bicycle safety reminders:

- At night, wear reflective clothing.
- Always wear a helmet. It's the law for children under 18 when riding a bicycle, scooter, skateboard or skates.
- Ride in the same direction as auto traffic.
- Always look over your shoulder to make sure the lane is clear before turning or changing lanes and always signal before changing lanes.
- Bicyclists must obey STOP signs and signals. It's a good idea to stop for yellow lights—rushing through one may not leave you enough time to make it across the intersection before the light changes.

Tips for reducing water use

Tip #1: Follow Lakewood's watering rules

■ **The rules are designed to help each household and business reduce water use by Lakewood's assigned target of 20%. If you follow the rules, your usage should drop…and you'll be helping your community reach its goal.**

• For Lakewood water customers, during June through September you can water only twice a week for 10 minutes in each area of our yard.

• Watering days are your trash day and then three days later. For example, if your trash day is Friday, you can water on Friday and then three days later on Monday.

• Watering is limited to before 8:00 a.m. and after 8:00 p.m.

• During the cooler months of October to May, you can water only once a week for 10 minutes in each area and only on your trash day. Watering then is limited to before 9:00 a.m. and after 5:00 p.m.

• If you live in Lakewood east of the San Gabriel River and are a Golden State Water Co. customer, you have similar rules but different watering days and some other variances. For details, go to **www.gswater.com** or call 800-999-4033.

Tip #2: To water more often under the rules, use water-wise sprinklers and methods

■ If you are a Lakewood water customer, you can water any day or time and without time limits IF you use the following water-wise methods:

• Water-wise rotor sprinklers that meet a 70% efficiency standard (labeling on the sprinkler will indicate if is "water wise");

• Drip irrigation emitters producing no more than two gallons per hour;

• Hand-watering of lawns and landscaping with a hose with a shut-off nozzle or a water bucket.

Tip #3: Use rebates to save money installing water-wise devices or landscaping

■ Learn about rebates for water-wise sprinklers, irrigation devices and landscaping at **www.lakewoodcity.org/water** or call 562-866-9771, extension 2140. Lakewood offers over $1,300 in rebates per customer.

Tip #4: Dethatch and aerate your lawn

■ These two essential steps to maintaining a healthy lawn can be done any time of the year, but are most effective in fall or spring. They help your lawn make the most of limited watering, especially important during a drought. They remove dead grass and open up the soil to let your turf breathe and get the proper nutrients. See an informative video at **www.lakewoodcity.org/dethatchvideo**.

Tip #5: Keep your trees healthy

■ Your trees are getting stressed during the drought and need watering to stay healthy. Many people incorrectly think the best place to water a tree is right at the base of its trunk. Instead, the best method is to saturate the soil at the "dripline" (the outer edges of the tree's branches). Get more information and tips on how often to water trees at **www.lakewoodcity.org/treecare** or call 562-866-9771, extension 2140.

Tip #6: Get more water-saving tips by going to…

■ **www.lakewoodcity.org/WaterWise** or by calling 562-866-9771, extension 2140

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** NEW Lakewood Watering Schedule **

June 17, 2015

Dear Lakewood Residential Water Customer:

Because of the ongoing drought, the state government has imposed new requirements on local communities to further reduce water use. Each community has been given a specific target for conservation based on its per capita use of water. Lakewood must reduce its community water use by 20% from 2013 levels. If communities don't reach their targets, the state will impose even tougher water rules--or levy fines on the community.

To help our community reach our target, the City of Lakewood has approved new rules that reduce and – for the first time in decades – specifically identify the days each week that Lakewood water customers can water their yards. If we each follow these new rules, we should be able to reach our community goals.

- The watering of lawns and landscaping will now be limited to **two times a week** during the months of June through September. The length of time to water is limited to ten minutes for each area if you move a sprinkler around or for each zone if you have an automatic sprinkler system.

- **The two specific days of watering will be your trash day and then three days later.** For example, if your trash day is Monday, you can water on Mondays and Thursdays. See the attached map.

- **Watering is limited to before 8:00 a.m. or after 8:00 p.m.**

- **Watering is prohibited during or within 48 hours of rainfall.**

During the cooler months of October through May, watering will be limited to once a week on your trash day for ten minutes for each area either before 9:00 a.m. or after 5:00 p.m.

Exceptions to the watering schedule and time limits include:

1) watering with water-wise "rotor sprinklers" that meet a 70% efficiency standard;
2) watering with drip irrigation emitters producing no more than two gallons per hour;
3) hand watering of lawns or landscaping when done with a shut-off nozzle or water bucket.

Unchanged from last year's rules, water **cannot** run off to sidewalks, gutters or other hardscape. Lakewood will start with a friendly reminder if an initial violation is spotted. For a first formal violation, there will be a written warning from the city with no penalty. A second violation will bring a citation of $100, with further citations bringing fines up to $500 and the potential for flow restrictors being installed at the residence.

The portion of Lakewood that is east of the San Gabriel River is served by the Golden State Water Company, which also has a two-day-a-week watering schedule. Golden State uses a different two-day schedule because its service area crosses multiple city boundaries.

I have seen our community go through droughts before, but this is by far the most serious. Lakewood has great community spirit. **If we each do our part to reach our conservation goal, we will be successful.** In the process, please be courteous toward your neighbor so we get through this in a positive way befitting our community.

With questions about the water rules, or for tips on reducing water use, keeping trees healthy during the drought, and getting rebates for water-wise irrigation and landscaping, please contact Lakewood city staff at 562-866-9771, extension 2140 or at service1@lakewoodcity.org or **www.lakewoodcity.org/water.**

Lakewood's water rules are available in Spanish, Tagalog and other languages through a translation feature at the website above. Para informacion en espanol, llame Alma Varela a 562-866-9771, extension 2103. Para sa karagdagang impormasyon, tawagan si Leon de los Reyes sa numero (562) 866-9771, extension 2700.

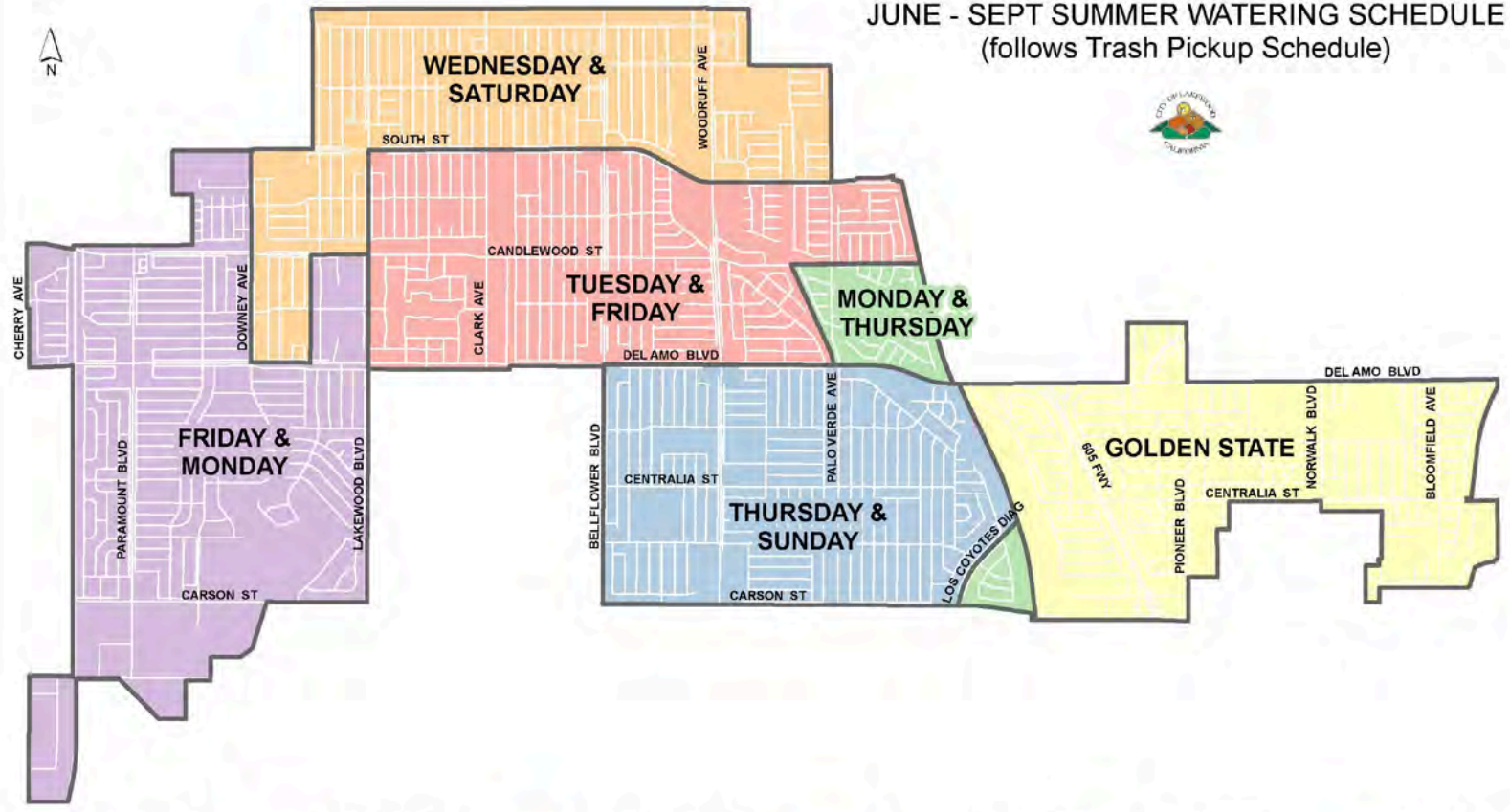
Sincerely,

James B. Glancy
Water Resources Director
City of Lakewood

City of Lakewood

JUNE - SEPT SUMMER WATERING SCHEDULE

(follows Trash Pickup Schedule)



MONDAY & THURSDAY | TUESDAY & FRIDAY | WEDNESDAY & SATURDAY | THURSDAY & SUNDAY | FRIDAY & MONDAY | GOLDEN STATE

*Golden State Watering Days:
Addresses ending in Even Numbers is Sunday & Wednesday
Addresses ending in Odd Numbers is Tuesday & Saturday

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ATTACHMENT 17

Drip. Drip. Drip. Every drop adds up. The many ways in which water can be wasted around the house adds up to a major conservation problem. But it's a problem you can help solve.

We've circled one or more water waster violations that we would like you to fix. Please call us at 562-866-9771, extension 2140 to speak with one of our customer service representatives.

Lakewood water rules

A State of Emergency has been declared in California due to the drought. In response, on May 26, 2015 the City of Lakewood adopted new water conservation rules listed here:

- Watering lawns and landscaping based on your regular trash day as follows:

Months	Times per week	Watering hours	Duration	Watering days
June – Sep	Twice	Before 8:00am OR after 8:00pm	10 minutes for each area	Trash day plus three days later for 2nd day
Oct – May	Once	Before 9:00am OR after 5:00pm	10 minutes for each area	Trash day

For example, if your trash day is Monday, you can water on that day and then three days later on Thursday. Or, if your trash day is Friday, you can water on that day and then three days later on Monday.

- No washing down of driveways and sidewalks.
- No overspray or runoff from lawn irrigation.
- No watering during or 48-hours after measurable rain.
- Quickly repair leaks in plumbing.
- Wash vehicles and equipment only with a bucket or hose with shut-off nozzle.
- Exemptions to lawn-watering day/time limits are made for low-water-use "rotor sprinklers" that meet a 70% efficiency standard.
- Exemptions also made for drip irrigation with emitters using no more than two gallons per hour and for hand watering with a shut off nozzle.

Lakewood offers rebates to help you buy rotor sprinklers, drip irrigation kits and other water efficiency tools. Go to **www.lakewoodcity.org/waterrebates** or call 562-866-9771, extension 2140.

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WHAT DOES A 20% REDUCTION *in water use look like?*

INDOOR WATER USE

The average Lakewood resident uses 80 gallons of water per day. Here are some easy ways to save 20%, or 16 gallons a day.

80 GALLONS PER DAY

Save Our WATER

For more tips on reducing water use, visit www.lakewoodcity.org/water.

TURN OFF WATER WHEN BRUSHING TEETH OR SHAVING
saves
10 GALLONS
per person/day

TAKE FIVE MINUTE SHOWERS INSTEAD OF 10 MINUTE SHOWERS
saves
12.5 GALLONS
with a water-efficient showerhead

RUN DISHWASHER WHEN FULL INSTEAD OF HALF FULL
saves
5-15 GALLONS
per load

FIX LEAKY TOILETS
saves
30-50 GALLONS
per day/toilet

WASH ONLY FULL LOADS
saves
15-45 GALLONS
per load

FILL THE BATHTUB HALFWAY OR LESS
saves
12 GALLONS
per person

WHAT DOES A 20% REDUCTION *in water use look like?*

OUTDOOR WATER USE

The average Lakewood resident uses 80 gallons of water per day and up to 70% of their water outdoors. Here are some easy outdoor tips to reduce water use. Find the right combination for you to reduce by 20% or 16 gallons a day.

For more tips on reducing water use, visit www.lakewoodcity.org/water.

USE A BROOM TO CLEAN OUTDOOR AREAS
saves
8-18 GALLONS
per minute

ADJUST SPRINKLER TO WATER PLANTS, NOT DRIVEWAY
saves
12-15 GALLONS
each time you water

INSTALL A "SMART" CONTROLLER
saves
24+ GALLONS
per day

USE MULCH ON SOIL SURFACE
saves
20-30 GALLONS
per 1,000 sq. ft. each time

WATER PLANTS EARLY IN THE AM
saves
25 GALLONS
each time you water

INSTALL DRIP IRRIGATION
saves
15 GALLONS
each time you water

CITY OF LAKEWOOD CALIFORNIA

** NEW **

Lakewood Watering Schedule & Water-Saving Tips

June 2015

June – September watering schedule	If your trash day is:		You can water again on:
• Twice per week (on trash day and 3 days later) • Before 8:00 a.m. OR after 8:00 p.m. • 10 minutes per area of yard • See inside pamphlet for October to May schedule.	Monday	→	Thursday
	Tuesday	→	Friday
	Wednesday	→	Saturday
	Thursday	→	Sunday
	Friday	→	Monday

You can water any day or time and without time limits IF you use the following water-wise methods:

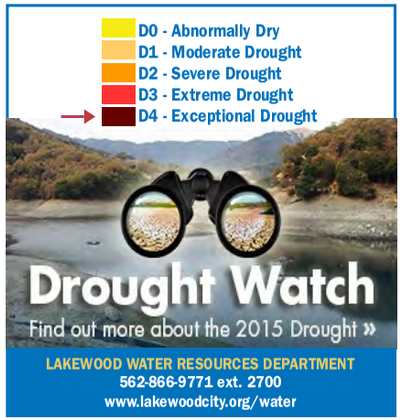
1) water-wise "rotor sprinklers" that meet a 70% efficiency standard;

2) drip irrigation emitters producing no more than two gallons per hour;

3) hand-watering of lawns or landscaping with a hose with a shut-off nozzle or a water bucket.

** In the portion of Lakewood east of the San Gabriel River, water service is provided by the Golden State Water Company, which has its own two-day-a-week schedule and rebate programs. For details, go to:* ***gswater.com*** *or call 800-999-4033.*

Because of the drought, there are new requirements on local communities to reduce water use. If each of us in Lakewood follow these new rules, we should be able to reach our community goal of a 20% reduction.



Other key aspects of Lakewood's water rules:

- Water cannot run off to sidewalks, gutters or hardscape.
- Lakewood will start with a friendly reminder for an initial violation. For a first formal violation, there will be a written warning from the city with no penalty.
- A second violation will bring a citation of $100, with further citations bringing fines up to $500 and the potential for flow restrictors being installed at the residence.

October to May Watering Schedule

- During these cooler, autumn to spring months, watering will be limited to once a week on your trash day for 10 minutes for each area of your yard before 9:00 a.m. or after 5:00 p.m.

With Questions, Please Contact:

- Lakewood city staff at 562-866-9771, extension 2140 or
- service1@lakewoodcity.org or
- www.lakewoodcity.org/water.

LAKEWOOD WATER WISE REBATES

Save $2,900 With Water Rebates

- Lakewood residential water customers can get up to $1,300 in rebates from the City of Lakewood for irrigation devices and turf removal/landscaping combined with over $1,600 in rebates from the Metropolitan Water District.
- Start small with irrigation devices…or go big by removing turf and installing water-wise landscaping.
- Your lower water use means permanently reduced water bills too. Plus, having water-wise irrigation devices (such as rotor sprinkler heads and drip irrigation systems) exempts you from the restrictions on the amount of time and days that yards can be watered.

Irrigation Device Rebates

- Earn rebates of over $100 for items like modern water-saving rotor sprinkler heads, hose end timers and drip irrigation kits.

Turf Removal and Landscaping Rebates

- Lakewood will pay you $1 a square foot and the Metropolitan Water District will pay you an additional $2 a square foot to remove some or all of your turf and install water-wise landscaping and surfaces.

- Rebates cover a maximum of 800 square feet. Lakewood's rebate is a credit on future water bills.
- Projects must be approved BEFORE a yard makeover begins.

Sub-Surface Irrigation Rebates

- This is a highly efficient irrigation system, with no loss of water to evaporation or wind. Lakewood water customers can get rebates of $0.50 a square foot for project areas up to 800 square feet. (Before you start the work, be sure to complete the application and get qualified for the rebate.)

Sample Plans for Water-Wise Landscaping

- You can see photos and sample plans of beautiful water-wise yards in the Lakewood area at: www.lakewoodcity.org/waterwiseplans.

Details and Applications for Water Rebates:

- www.lakewoodcity.org/waterrebates
- 562-866-9771, extension 2140

BUSINESS WATER CONSERVATION PLAN

Date: _____

Name of Business: _____

Telephone Number: _____

Address: _____
Street

_____
City State Zip Code

Mailing Address (If Different From Above)

Address: _____
Street

_____
City State Zip Code

Type of Business: _____

Contact Person: _____ Title _____

Number of Employees: _____

Normal Hours of Operation: Days _____ Hours _____

Building Size: _____ square feet

Average Bi-Monthly Water Consumption _____ hcf

Domestic Water Service Connections

Number of Domestic Water Service(s): _____

Meter Location: _____ Size _____

Meter Location: _____ Size _____

Meter Location: _____ Size _____

(Attach additional sheet with water meter location and size if served by more than three domestic services.)

Fire Protection Water Service Connections

Number of Fire Protection Water Service(s): _____

Meter Location: _____ Size _____

Meter Location: _____ Size _____

Meter Location: _____ Size _____

(Attach additional sheet with water meter location and size if served by more than three domestic services.)

Irrigation Water Service Connections

Number of Domestic Water Service(s): _____

Meter Location: _____ Size _____

Meter Location: _____ Size _____

Meter Location: _____ Size _____

(Attach additional sheet with water meter location and size if served by more than three domestic services.)

Name of Business: _____

WATER USE SURVEY

INDOOR WATER USE

Water Source	Number	Gallons per Minute Flow	Average Frequency of Use	Daily Use (Gallons)
Toilets				
Urinals				
Restroom Faucets				
Kitchen Faucets				
Shower				
Refrigeration				
Ice Maker				
Other				
			TOTAL INDOOR USE	

OUTDOOR WATER USE

Water Source	Number[1]	Gallons per Minute Flow	Minutes in Use	Gallons per Use	Weekly Use	Average Use per Week
Irrigation[2]						
Hose Bib						
Other						
					OUTDOOR USE TOTAL	

[1]Number of Sprinkler Heads in Irrigation System

[2]Automatic Sprinkler System

Name of Business: _____

ESTIMATED WATER CONSERVATION SAVINGS

INDOOR WATER CONSERVATION SAVINGS

Water Source	Estimated Savings per Use (Gallons)	Estimated Frequency of Use	Previous Daily Average Use[3]	Estimated Total Savings	New Average Daily Use
Toilets					
Urinals					
Restroom Faucets					
Kitchen Faucets					
Shower					
Refrigeration					
Ice Maker					
Other					
TOTAL INDOOR USE					

OUTDOOR WATER CONSERVATION SAVINGS

Water Source	Estimated Savings per Use (Gallons)	Proposed Frequency of Use	Previous Average Weekly Use[4]	Estimated Total Savings	New Average Weekly Use
Irrigation[5]					
Hose Bib					
Other					
OUTDOOR USE TOTAL					

[3]From Water Use Survey

[4]From Water Use Survey

[5]Automatic Sprinkler System

Name of Business: _____

WATER CONSERVATION SAVINGS SUMMARY

CONSERVATION GOAL

	Daily Use	X	Days of Operation	=	Weekly Use
Indoors		X		=	
Outdoors		X		=	
			TOTAL WATER SAVINGS		
					X 8 Weeks
			ESTIMATED CONSERVATION GOAL IN GALLONS		
			Divide by Number of Gallons in one Billing Unit		¸ 748
			TOTAL BI-MONTHLY CONSERVATION GOAL		hcf

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

ACCOUNT #:			DATE:
NAME:			
TELEPHONE:		DAY	EVENING
SERVICE ADDRESS:			
	Street	City	Zip Code
BILLING ADDRESS:			
	Street	City	Zip Code

A customer may apply for relief from the provisions in the City of Lakewood Water Conservation Ordinance 91-3. No relief shall be granted without proof of reasonable inability to comply with the provisions in the ordinance, proof that alternative conservation measures have been adopted by the customer, or proof that the water use restrictions would provide substantial hardship on the customer outweighing the benefits of water conservation. Commercial customers must submit a water conservation plan with this request.

The customer shall complete this form and return it to the **CITY OF LAKEWOOD DEPARTMENT OF WATER RESOURCES, 5050 N. Clark Avenue, Lakewood, CA 90712**. The decision of the Director of Water Resources shall be rendered within fifteen (15) days after the receipt of the request for exemption. The decision of the Director of Water Resources may be appealed by filing with the City Clerk within thirty (30) days after receipt of said decision.

Please complete the following information as thoroughly as possible. Failure to provide necessary information could result in automatic denial of your request.

I am requesting an exemption from the above mentioned water use restriction(s) for the following reason(s):

Type of exemption from improper water use restrictions:

- ☐ Washing Down Driveway 7511.1c.1 LMC
- ☐ Washing Down Sidewalk 7511.1c.1 LMC
- ☐ Washing Down Parking Lots 7511.1c.1 LMC
- ☐ Washing Down Building Exterior 7511.1c.1 LMC
- ☐ Washing Down Streets and Gutters 7511.1c.1 LMC
- ☐ Washing Vehicles without Shut Off Valve 7511.1c.2 LMC
- ☐ Washing Equipment without Shut Off Valve 7511.1c.2 LMC
- ☐ Non-recirculating Fountains 7511.1c.3 LMC
- ☐ Unrepaired Plumbing Leak 7511.1c.5 LMC
- ☐ Improper Irrigation 7511.1c Water Run-off 7511.1c.7 LMC.6 LMC

I am requesting an exemption from the above mentioned water use restriction(s) for the following reason(s):

- ☐ In the process of testing, adjusting or repairing sprinklers.
- ☐ Health condition that limits ability to conform to water use restrictions. (Please attach a statement from a physician.)
- ☐ Hosing new paved surface for the purpose of curing for up to one month after paving.
- ☐ Hosing hardscape due to unsanitary condition.
- ☐ Dust control due to construction.
- ☐ Public health and safety.
- ☐ Police, fire or other similar emergency service.
- ☐ Other:

Explanation. Please explain the circumstances present at the time you received the "Notice of Improper Water Use" and any other relevant information that would facilitate the processing of this appeal. (Attach additional sheets if necessary.):

I certify that the information contained in this appeal is complete and accurate to the best of my knowledge.

Signature of Customer

Date

LAKEWOOD DEPARTMENTOF WATER RESOURCES USE ONLY
Notice of Improper Water Use Appeal

Approval Date:

Denied Date:

Authorized Personnel:

Name

Title

BUSINESS WATER CONSERVATION PLAN

Date: _____

Name of Business: _____

Telephone Number: _____

Address: _____
Street

_____
City State Zip Code

Mailing Address (If Different From Above)

Address: _____
Street

_____
City State Zip Code

Type of Business: _____

Contact Person: _____ Title _____

Number of Employees: _____

Normal Hours of Operation: Days _____ Hours _____

Building Size: _____ square feet

Average Bi-Monthly Water Consumption _____ hcf

Domestic Water Service Connections

Number of Domestic Water Service(s): _____

Meter Location: _____ Size _____

Meter Location: _____ Size _____

Meter Location: _____ Size _____

(Attach additional sheet with water meter location and size if served by more than three domestic services.)

Fire Protection Water Service Connections

Number of Fire Protection Water Service(s): _____

Meter Location: _____ Size _____

Meter Location: _____ Size _____

Meter Location: _____ Size _____

(Attach additional sheet with water meter location and size if served by more than three domestic services.)

Irrigation Water Service Connections

Number of Domestic Water Service(s): _____

Meter Location: _____ Size _____

Meter Location: _____ Size _____

Meter Location: _____ Size _____

(Attach additional sheet with water meter location and size if served by more than three domestic services.)

Name of Business: _____

WATER USE SURVEY

INDOOR WATER USE

Water Source	Number	Gallons per Minute Flow	Average Frequency of Use	Daily Use (Gallons)
Toilets				
Urinals				
Restroom Faucets				
Kitchen Faucets				
Shower				
Refrigeration				
Ice Maker				
Other				
			TOTAL INDOOR USE	

OUTDOOR WATER USE

Water Source	Number[1]	Gallons per Minute Flow	Minutes in Use	Gallons per Use	Weekly Use	Average Use per Week
Irrigation[2]						
Hose Bib						
Other						
					OUTDOOR USE TOTAL	

[1]Number of Sprinkler Heads in Irrigation System

[2]Automatic Sprinkler System

Name of Business: _____

ESTIMATED WATER CONSERVATION SAVINGS

INDOOR WATER CONSERVATION SAVINGS

Water Source	Estimated Savings per Use (Gallons)	Estimated Frequency of Use	Previous Daily Average Use[3]	Estimated Total Savings	New Average Daily Use
Toilets					
Urinals					
Restroom Faucets					
Kitchen Faucets					
Shower					
Refrigeration					
Ice Maker					
Other					
TOTAL INDOOR USE					

OUTDOOR WATER CONSERVATION SAVINGS

Water Source	Estimated Savings per Use (Gallons)	Proposed Frequency of Use	Previous Average Weekly Use[4]	Estimated Total Savings	New Average Weekly Use
Irrigation[5]					
Hose Bib					
Other					
OUTDOOR USE TOTAL					

[3]From Water Use Survey

[4]From Water Use Survey

[5]Automatic Sprinkler System

Name of Business: _____

WATER CONSERVATION SAVINGS SUMMARY

CONSERVATION GOAL

	Daily Use	X	Days of Operation	=	Weekly Use
Indoors		X		=	
Outdoors		X		=	
			TOTAL WATER SAVINGS		
					X 8 Weeks
			ESTIMATED CONSERVATION GOAL IN GALLONS		
			Divide by Number of Gallons in one Billing Unit		¸ 748
			TOTAL BI-MONTHLY CONSERVATION GOAL		hcf

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ATTACHMENT 22

[Proof of Notification & Distribution of 2015 UWMP Pending Distribution]

April 29, 2016

Sent via email to: DUpadhyay@mwdh2o.com

Deven Upadhyay
Group Manager, Water Resource Management
Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153

SUBJECT: CITY OF LAKEWOOD 2015 URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Upadhyay:

The City of Lakewood Department of Water Resources is currently in the process of preparing the 2015 Urban Water Management Plan (UWMP), as required by the California Department of Water Resources. The City would like to give your agency an opportunity to provide input for the preparation of this long range planning document.

The draft plan public comment period began April 27, 2016, and the public hearing and plan adoption is scheduled for June 28, 2016. If you would like to review the draft 2015 UWMP Update, please review it via the city's website at http://www.lakewoodcity.org/news/green_living/uwmp.asp. Also, if your organization has any comment or additional information that should be incorporated in Lakewood's Plan, please contact Toyasha Sebbag, Water Administration Manager, at 562.866.9771, extension 2702, or email her at tsebbag@lakewoodcity.org.

Sincerely,

Jason J. Wen, Ph.D., P.E.
Director of Water Resources

April 29, 2016

Sent via email to: gfarber@dpw.lacounty.gov

Gail Farber
Director
Los Angeles County Department of Public Works
900 S. Fremont Ave.
Alhambra, CA 91803

SUBJECT: CITY OF LAKEWOOD 2015 URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mrs. Farber:

The City of Lakewood Department of Water Resources is currently in the process of preparing the 2015 Urban Water Management Plan (UWMP), as required by the California Department of Water Resources. The City would like to give your agency an opportunity to provide input for the preparation of this long range planning document.

The draft plan public comment period began April 27, 2016, and the public hearing and plan adoption is scheduled for June 28, 2016. If you would like to review the draft 2015 UWMP Update, please review it via the city's website at http://www.lakewoodcity.org/news/green_living/uwmp.asp. Also, if your organization has any comment or additional information that should be incorporated in Lakewood's Plan, please contact Toyasha Sebbag, Water Administration Manager, at 562.866.9771, extension 2702, or email her at tsebbag@lakewoodcity.org.

Sincerely,

Jason J. Wen, Ph.D., P.E.
Director of Water Resources

April 29, 2016

Sent via email to: rwhitaker@wrd.org

Robb Whitaker
General Manager
Water Replenishment District
4040 Paramount Boulevard
Lakewood, CA 90712

SUBJECT: CITY OF LAKEWOOD 2015 URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Whitaker:

The City of Lakewood Department of Water Resources is currently in the process of preparing the 2015 Urban Water Management Plan (UWMP), as required by the California Department of Water Resources. The City would like to give your agency an opportunity to provide input for the preparation of this long range planning document.

The draft plan public comment period began April 27, 2016, and the public hearing and plan adoption is scheduled for June 28, 2016. If you would like to review the draft 2015 UWMP Update, please review it via the city's website at http://www.lakewoodcity.org/news/green_living/uwmp.asp. Also, if your organization has any comment or additional information that should be incorporated in Lakewood's Plan, please contact Toyasha Sebbag, Water Administration Manager, at 562.866.9771, extension 2702, or email her at tsebbag@lakewoodcity.org.

Sincerely,

Jason J. Wen, Ph.D., P.E.
Director of Water Resources

April 29, 2016

Sent via email to: kevinh@centralbasin.org

Kevin P. Hunt, P.E.
General Manager
Central Basin Municipal Water District
6252 Telegraph Road
Commerce, CA 90040

SUBJECT: CITY OF LAKEWOOD 2015 URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Hunt:

The City of Lakewood Department of Water Resources is currently in the process of preparing the 2015 Urban Water Management Plan (UWMP), as required by the California Department of Water Resources. The City would like to give your agency an opportunity to provide input for the preparation of this long range planning document.

The draft plan public comment period began April 27, 2016, and the public hearing and plan adoption is scheduled for June 28, 2016. If you would like to review the draft 2015 UWMP Update, please review it via the city's website at http://www.lakewoodcity.org/news/green_living/uwmp.asp. Also, if your organization has any comment or additional information that should be incorporated in Lakewood's Plan, please contact Toyasha Sebbag, Water Administration Manager, at 562.866.9771, extension 2702, or email her at tsebbag@lakewoodcity.org.

Sincerely,

Jason J. Wen, Ph.D., P.E.
Director of Water Resources

April 29, 2016

Sent via email to: matthew.lyons@lbwater.org

Matthew Lyons
Director of Planning and Conservation
Long Beach Water Department
1800 East Wardlow Road
Long Beach, CA 90807

SUBJECT: CITY OF LAKEWOOD 2015 URBAN WATER MANAGEMENT PLAN UPDATE

Dear Mr. Lyons:

The City of Lakewood Department of Water Resources is currently in the process of preparing the 2015 Urban Water Management Plan (UWMP), as required by the California Department of Water Resources. The City would like to give your agency an opportunity to provide input for the preparation of this long range planning document.

The draft plan public comment period began April 27, 2016, and the public hearing and plan adoption is scheduled for June 28, 2016. If you would like to review the draft 2015 UWMP Update, please review it via the city's website at http://www.lakewoodcity.org/news/green_living/uwmp.asp. Also, if your organization has any comment or additional information that should be incorporated in Lakewood's Plan, please contact Toyasha Sebbag, Water Administration Manager, at 562.866.9771, extension 2702, or email her at tsebbag@lakewoodcity.org.

Sincerely,

Jason J. Wen, Ph.D., P.E.
Director of Water Resources

AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: City of Lakewood
Reporting Year: 2015 (1/2015 - 12/2015)

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

<---------- Enter grading in column 'E' and 'J' ---------->

Master Meter and Supply Error Adjustments

WATER SUPPLIED

					Pcnt:	Value:	
Volume from own sources:	10	7,698.000	acre-ft/yr	6			acre-ft/yr
Water imported:	n/a	0.000	acre-ft/yr				acre-ft/yr
Water exported:	10	1,116.000	acre-ft/yr	6			acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 6,582.000 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	10	6,173.000	acre-ft/yr			
Billed unmetered:		0.000	acre-ft/yr			
Unbilled metered:	10	0.000	acre-ft/yr			
Unbilled unmetered:		82.275	acre-ft/yr	1.25%		acre-ft/yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

AUTHORIZED CONSUMPTION: 6,255.275 acre-ft/yr

Use buttons to select percentage of water supplied **OR** value

WATER LOSSES (Water Supplied - Authorized Consumption) 326.725 acre-ft/yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		16.455	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	2	9.665	acre-ft/yr		9.665	acre-ft/yr
Systematic data handling errors:	6	9.665	acre-ft/yr		9.665	acre-ft/yr

Apparent Losses: 35.785 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 290.940 acre-ft/yr

WATER LOSSES: 326.725 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 409.000 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	3	18.5	miles
Number of active AND inactive service connections:	6	20,339	
Service connection density:		1099	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure:	8	55.0	psi

COST DATA

Total annual cost of operating water system:	10	$9,247,985	$/Year	
Customer retail unit cost (applied to Apparent Losses):	7	$3.18	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	2	$480.51	$/acre-ft	☑ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 76 out of 100 ***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Customer metering inaccuracies
2: Variable production cost (applied to Real Losses)
3: Unauthorized consumption

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: City of Lakewood
Reporting Year: 2015 | 1/2015 - 12/2015

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 76 out of 100 ***

System Attributes:

	Apparent Losses:	35.785	acre-ft/yr
+	Real Losses:	290.940	acre-ft/yr
=	Water Losses:	326.725	acre-ft/yr
?	Unavoidable Annual Real Losses (UARL):	194.12	acre-ft/yr
	Annual cost of Apparent Losses:	$49,570	
	Annual cost of Real Losses:	$403,012	Valued at Customer Retail Unit Cost

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	6.2%	
	Non-revenue water as percent by cost of operating system:	6.1%	Real Losses valued at Customer Retail Unit Cost
Operational Efficiency:	Apparent Losses per service connection per day:	1.57	gallons/connection/day
	Real Losses per service connection per day:	12.77	gallons/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per psi pressure:	0.23	gallons/connection/day/psi

	From Above, Real Losses = Current Annual Real Losses (CARL):	290.94	acre-feet/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	1.50	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

AWWA Free Water Audit Software: Water Balance

WAS v5.0

Water Audit Report for:	City of Lakewood	
Reporting Year:	2015	1/2015 - 12/2015
Data Validity Score:	76	

Water Exported
1,116.000

Billed Water Exported

Revenue Water
1,116.000

Own Sources
(Adjusted for known errors)
7,698.000

Water Imported
0.000

System Input
7,698.000

Water Supplied
6,582.000

Authorized Consumption
6,255.275

Billed Authorized Consumption
6,173.000

Billed Metered Consumption (water exported is removed)
6,173.000

Billed Unmetered Consumption
0.000

Revenue Water
6,173.000

Unbilled Authorized Consumption
82.275

Unbilled Metered Consumption
0.000

Unbilled Unmetered Consumption
82.275

Non-Revenue Water (NRW)
409.000

Water Losses
326.725

Apparent Losses
35.785

Unauthorized Consumption
16.455

Customer Metering Inaccuracies
9.665

Systematic Data Handling Errors
9.665

Real Losses
290.940

Leakage on Transmission and/or Distribution Mains
Not broken down

Leakage and Overflows at Utility's Storage Tanks
Not broken down

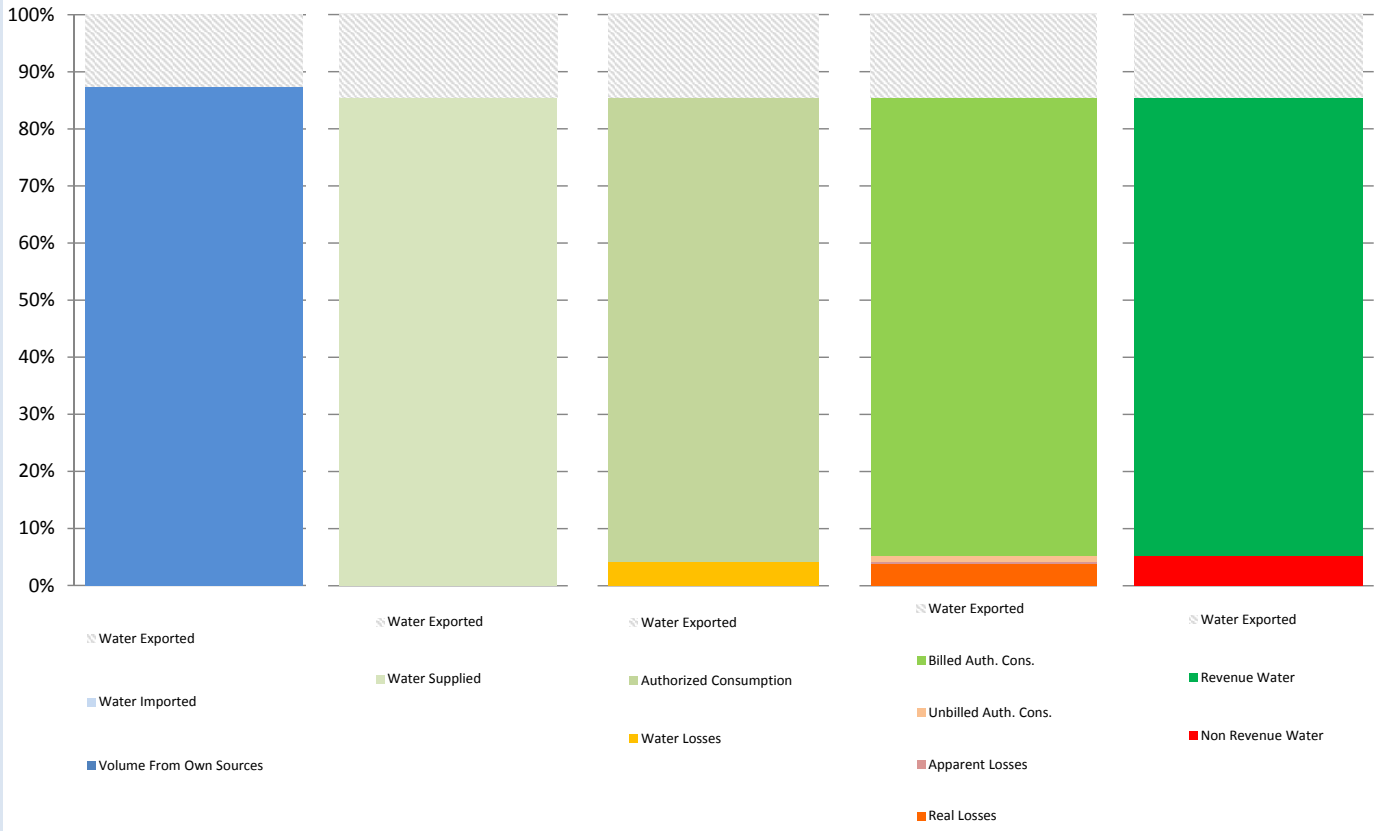
Leakage on Service Connections
Not broken down

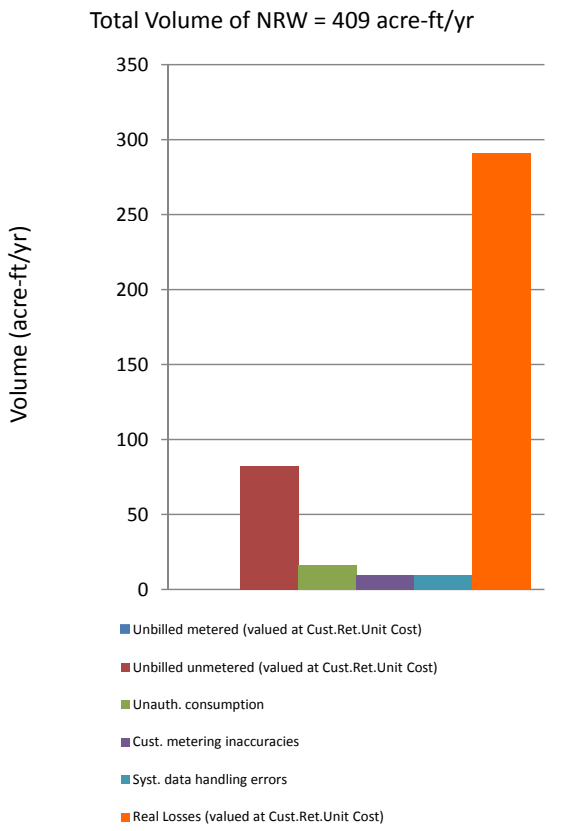
AWWA Free Water Audit Software:
Dashboard

The graphic below is a visual representation of the Water Balance with bar heights propotional to the volume of the audit components

Water Audit Report for:	City of Lakewood	
Reporting Year:	2015	1/2015 - 12/2015
Data Validity Score:	76	

(●) Show me the VOLUME of Non-Revenue Water
( ) Show me the COST of Non-Revenue Water





AWWA Free Water Audit Software: Grading Matrix

WAS 5.0

The grading assigned to each audit component and the corresponding recommended improvements and actions are highlighted in yellow. Audit accuracy is likely to be improved by prioritizing those items shown in red

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
WATER SUPPLIED											
Volume from own sources:	Select this grading only if the water utility purchases/imports all of its water resources (i.e. has no sources of its own)	Less than 25% of water production sources are metered, remaining sources are estimated. No regular meter accuracy testing or electronic calibration conducted.	25% - 50% of treated water production sources are metered; other sources estimated. No regular meter accuracy testing or electronic calibration conducted.	Conditions between 2 and 4	50% - 75% of treated water production sources are metered, other sources estimated. Occasional meter accuracy testing or electronic calibration conducted.	Conditions between 4 and 6	At least 75% of treated water production sources are metered, or at least 90% of the source flow is derived from metered sources. Meter accuracy testing and/or electronic calibration of related instrumentation is conducted annually. Less than 25% of tested meters are found outside of +/- 6% accuracy.	Conditions between 6 and 8	100% of treated water production sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted annually, less than 10% of meters are found outside of +/- 6% accuracy	Conditions between 8 and 10	100% of treated water production sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted semi-annually, with less than 10% found outside of +/- 3% accuracy. Procedures are reviewed by a third party knowledgeable in the M36 methodology.
Improvements to attain higher data grading for "Volume from own Sources" component:		to qualify for 2: Organize and launch efforts to collect data for determining volume from own sources	to qualify for 4: Locate all water production sources on maps and in the field, launch meter accuracy testing for existing meters, begin to install meters on unmetered water production sources and replace any obsolete/defective meters.		to qualify for 6: Formalize annual meter accuracy testing for all source meters; specify the frequency of testing. Complete installation of meters on unmetered water production sources and complete replacement of all obsolete/defective meters.		to qualify for 8: Conduct annual meter accuracy testing and calibration of related instrumentation on all meter installations on a regular basis. Complete project to install new, or replace defective existing, meters so that entire production meter population is metered. Repair or replace meters outside of +/- 6% accuracy.		to qualify for 10: Maintain annual meter accuracy testing and calibration of related instrumentation for all meter installations. Repair or replace meters outside of +/- 3% accuracy. Investigate new meter technology; pilot one or more replacements with innovative meters in attempt to further improve meter accuracy.		to maintain 10: Standardize meter accuracy test frequency to semi-annual, or more frequent, for all meters. Repair or replace meters outside of +/- 3% accuracy. Continually investigate/pilot improving metering technology.
Volume from own sources master meter and supply error adjustment:	Select n/a only if the water utility fails to have meters on its sources of supply	Inventory information on meters and paper records of measured volumes exist but are incomplete and/or in a very crude condition; data error cannot be determined	No automatic datalogging of production volumes; daily readings are scribed on paper records without any accountability controls. Flows are not balanced across the water distribution system: tank/storage elevation changes are not employed in calculating the "Volume from own sources" component and archived flow data is adjusted only when grossly evident data error occurs.	Conditions between 2 and 4	Production meter data is logged automatically in electronic format and reviewed at least on a monthly basis with necessary corrections implemented. "Volume from own sources" tabulations include estimate of daily changes in tanks/storage facilities. Meter data is adjusted when gross data errors occur, or occasional meter testing deems this necessary.	Conditions between 4 and 6	Hourly production meter data logged automatically & reviewed on at least a weekly basis. Data is adjusted to correct gross error when meter/instrumentation equipment malfunction is detected; and/or error is confirmed by meter accuracy testing. Tank/storage facility elevation changes are automatically used in calculating a balanced "Volume from own sources" component, and data gaps in the archived data are corrected on at least a weekly basis.	Conditions between 6 and 8	Continuous production meter data is logged automatically & reviewed each business day. Data is adjusted to correct gross error from detected meter/instrumentation equipment malfunction and/or results of meter accuracy testing. Tank/storage facility elevation changes are automatically used in "Volume from own sources" tabulations and data gaps in the archived data are corrected on a daily basis.	Conditions between 8 and 10	Computerized system (SCADA or similar) automatically balances flows from all sources and storages; results are reviewed each business day. Tight accountability controls ensure that all data gaps that occur in the archived flow data are quickly detected and corrected. Regular calibrations between SCADA and sources meters ensures minimal data transfer error.
Improvements to attain higher data grading for "Master meter and supply error adjustment" component:		to qualify for 2: Develop a plan to restructure recordkeeping system to capture all flow data; set a procedure to review flow data on a daily basis to detect input errors. Obtain more reliable information about existing meters by conducting field inspections of meters and related instrumentation, and obtaining manufacturer literature.	to qualify for 4: Install automatic datalogging equipment on production meters. Complete installation of level instrumentation at all tanks/storage facilities and include tank level data in automatic calculation routine in a computerized system. Construct a computerized listing or spreadsheet to archive input volumes, tank/storage volume changes and import/export flows in order to determine the composite "Water Supplied" volume for the distribution system. Set a procedure to review this data on a monthly basis to detect gross anomalies and data gaps.		to qualify for 6: Refine computerized data collection and archive to include hourly production meter data that is reviewed at least on a weekly basis to detect specific data anomalies and gaps. Use daily net storage change to balance flows in calculating "Water Supplied" volume. Necessary corrections to data errors are implemented on a weekly basis.		to qualify for 8: Ensure that all flow data is collected and archived on at least an hourly basis. All data is reviewed and detected errors corrected each business day. Tank/storage levels variations are employed in calculating balanced "Water Supplied" component. Adjust production meter data for gross error and inaccuracy confirmed by testing.		to qualify for 10: Link all production and tank/storage facility elevation change data to a Supervisory Control & Data Acquisition (SCADA) System, or similar computerized monitoring/control system, and establish automatic flow balancing algorithm and regularly calibrate between SCADA and source meters. Data is reviewed and corrected each business day.		to maintain 10: Monitor meter innovations for development of more accurate and less expensive flowmeters. Continue to replace or repair meters as they perform outside of desired accuracy limits. Stay abreast of new and more accurate water level instruments to better record tank/storage levels and archive the variations in storage volume. Keep current with SCADA and data management systems to ensure that archived data is well-managed and error free.
Water Imported:	Select n/a if the water utility's supply is exclusively from its own water resources (no bulk purchased/ imported water)	Less than 25% of imported water sources are metered, remaining sources are estimated. No regular meter accuracy testing.	25% - 50% of imported water sources are metered; other sources estimated. No regular meter accuracy testing.	Conditions between 2 and 4	50% - 75% of imported water sources are metered, other sources estimated. Occasional meter accuracy testing conducted.	Conditions between 4 and 6	At least 75% of imported water sources are metered, meter accuracy testing and/or electronic calibration of related instrumentation is conducted annually for all meter installations. Less than 25% of tested meters are found outside of +/- 6% accuracy.	Conditions between 6 and 8	100% of imported water sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted annually, less than 10% of meters are found outside of +/- 6% accuracy	Conditions between 8 and 10	100% of imported water sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted semi-annually for all meter installations, with less than 10% of accuracy tests found outside of +/- 3% accuracy.
Improvements to attain higher data grading for "Water Imported Volume" component: (*Note: usually the water supplier selling the water - "the Exporter" - to the utility being audited is responsible to maintain the metering installation measuring the imported volume. The utility should coordinate carefully with the Exporter to ensure that adequate meter upkeep takes place and an accurate measure of the Water Imported volume is quantified.*)		to qualify for 2: Review bulk water purchase agreements with partner suppliers; confirm requirements for use and maintenance of accurate metering. Identify needs for new or replacement meters with goal to meter all imported water sources.	To qualify for 4: Locate all imported water sources on maps and in the field, launch meter accuracy testing for existing meters, begin to install meters on unmetered imported water interconnections and replace obsolete/defective meters.		to qualify for 6: Formalize annual meter accuracy testing for all imported water meters, planning for both regular meter accuracy testing and calibration of the related instrumentation. Continue installation of meters on unmetered imported water interconnections and replacement of obsolete/defective meters.		to qualify for 8: Complete project to install new, or replace defective, meters on all imported water interconnections. Maintain annual meter accuracy testing for all imported water meters and conduct calibration of related instrumentation at least annually. Repair or replace meters outside of +/- 6% accuracy.		to qualify for 10: Conduct meter accuracy testing for all meters on a semi-annual basis, along with calibration of all related instrumentation. Repair or replace meters outside of +/- 3% accuracy. Investigate new meter technology; pilot one or more replacements with innovative meters in attempt to improve meter accuracy.		to maintain 10: Standardize meter accuracy test frequency to semi-annual, or more frequent, for all meters. Continue to conduct calibration of related instrumentation on a semi-annual basis. Repair or replace meters outside of +/- 3% accuracy. Continually investigate/pilot improving metering technology.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Water imported master meter and supply error adjustment:	Select n/a if the Imported water supply is unmetered, with Imported water quantities estimated on the billing invoices sent by the Exporter to the purchasing Utility.	Inventory information on imported meters and paper records of measured volumes exist but are incomplete and/or in a very crude condition; data error cannot be determined Written agreement(s) with water Exporter(s) are missing or written in vague language concerning meter management and testing.	No automatic datalogging of imported supply volumes; daily readings are scribed on paper records without any accountability controls to confirm data accuracy and the absence of errors and data gaps in recorded volumes. Written agreement requires meter accuracy testing but is vague on the details of how and who conducts the testing.	Conditions between 2 and 4	Imported supply metered flow data is logged automatically in electronic format and reviewed at least on a monthly basis by the Exporter with necessary corrections implemented. Meter data is adjusted by the Exporter when gross data errors are detected. A coherent data trail exists for this process to protect both the selling and the purchasing Utility. Written agreement exists and clearly states requirements and roles for meter accuracy testing and data management.	Conditions between 4 and 6	Hourly Imported supply metered data is logged automatically & reviewed on at least a weekly basis by the Exporter. Data is adjusted to correct gross error when meter/instrumentation equipment malfunction is detected; and to correct for error confirmed by meter accuracy testing. Any data gaps in the archived data are detected and corrected during the weekly review. A coherent data trail exists for this process to protect both the selling and the purchasing Utility.	Conditions between 6 and 8	Continuous Imported supply metered flow data is logged automatically & reviewed each business day by the Exporter. Data is adjusted to correct gross error from detected meter/instrumentation equipment malfunction and/or results of meter accuracy testing. Any data errors/gaps are detected and corrected on a daily basis. A data trail exists for the process to protect both the selling and the purchasing Utility.	Conditions between 8 and 10	Computerized system (SCADA or similar) automatically records data which is reviewed each business day by the Exporter. Tight accountability controls ensure that all error/data gaps that occur in the archived flow data are quickly detected and corrected. A reliable data trail exists and contract provisions for meter testing and data management are reviewed by the selling and purchasing Utility at least once every five years.
Improvements to attain higher data grading for "Water imported master meter and supply error adjustment" component:		to qualify for 2: Develop a plan to restructure recordkeeping system to capture all flow data; set a procedure to review flow data on a daily basis to detect input errors. Obtain more reliable information about existing meters by conducting field inspections of meters and related instrumentation, and obtaining manufacturer literature. Review the written agreement between the selling and purchasing Utility.	to qualify for 4: Install automatic datalogging equipment on Imported supply meters. Set a procedure to review this data on a monthly basis to detect gross anomalies and data gaps. Launch discussions with the Exporters to jointly review terms of the written agreements regarding meter accuracy testing and data management; revise the terms as necessary.		to qualify for 6: Refine computerized data collection and archive to include hourly Imported supply metered flow data that is reviewed at least on a weekly basis to detect specific data anomalies and gaps. Make necessary corrections to errors/data errors on a weekly basis.		to qualify for 8: Ensure that all Imported supply metered flow data is collected and archived on at least an hourly basis. All data is reviewed and errors/data gaps are corrected each business day.		to qualify for 10: Conduct accountability checks to confirm that all Imported supply metered data is reviewed and corrected each business day by the Exporter. Results of all meter accuracy tests and data corrections should be available for sharing between the Exporter and the purchasing Utility. Establish a schedule for a regular review and updating of the contractual language in the written agreement between the selling and the purchasing Utility; at least every five years.		to maintain 10: Monitor meter innovations for development of more accurate and less expensive flowmeters; work with the Exporter to help identify meter replacement needs. Keep communication lines with Exporters open and maintain productive relations. Keep the written agreement current with clear and explicit language that meets the ongoing needs of all parties.
Water Exported:	Select n/a if the water utility sells no bulk water to neighboring water utilities (no exported water sales)	Less than 25% of exported water sources are metered, remaining sources are estimated. No regular meter accuracy testing.	25% - 50% of exported water sources are metered; other sources estimated. No regular meter accuracy testing.	Conditions between 2 and 4	50% - 75% of exported water sources are metered, other sources estimated. Occasional meter accuracy testing conducted.	Conditions between 4 and 6	At least 75% of exported water sources are metered, meter accuracy testing and/or electronic calibration conducted annually. Less than 25% of tested meters are found outside of +/- 6% accuracy.	Conditions between 6 and 8	100% of exported water sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted annually, less than 10% of meters are found outside of +/- 6% accuracy	Conditions between 8 and 10	100% of exported water sources are metered, meter accuracy testing and electronic calibration of related instrumentation is conducted semi-annually for all meter installations, with less than 10% of accuracy tests found outside of +/- 3% accuracy.
Improvements to attain higher data grading for "Water Exported Volume" component: (*Note: usually, if the water utility being audited sells (Exports) water to a neighboring purchasing Utility, it is the responsibility of the utility exporting the water to maintain the metering installation measuring the Exported volume. The utility exporting the water should ensure that adequate meter upkeep takes place and an accurate measure of the Water Exported volume is quantified.*)		to qualify for 2: Review bulk water sales agreements with purchasing utilities; confirm requirements for use & upkeep of accurate metering. Identify needs to install new, or replace defective meters as needed.	To qualify for 4: Locate all exported water sources on maps and in field, launch meter accuracy testing for existing meters, begin to install meters on unmetered exported water interconnections and replace obsolete/defective meters		to qualify for 6: Formalize annual meter accuracy testing for all exported water meters. Continue installation of meters on unmetered exported water interconnections and replacement of obsolete/defective meters.		to qualify for 8: Complete project to install new, or replace defective, meters on all exported water interconnections. Maintain annual meter accuracy testing for all exported water meters. Repair or replace meters outside of +/- 6% accuracy.		to qualify for 10: Maintain annual meter accuracy testing for all meters. Repair or replace meters outside of +/- 3% accuracy. Investigate new meter technology; pilot one or more replacements with innovative meters in attempt to improve meter accuracy.		to maintain 10: Standardize meter accuracy test frequency to semi-annual, or more frequent, for all meters. Repair or replace meters outside of +/- 3% accuracy. Continually investigate/pilot improving metering technology.
Water exported master meter and supply error adjustment:	Select n/a only if the water utility fails to have meters on its exported supply interconnections.	Inventory information on exported meters and paper records of measured volumes exist but are incomplete and/or in a very crude condition; data error cannot be determined Written agreement(s) with the utility purchasing the water are missing or written in vague language concerning meter management and testing.	No automatic datalogging of exported supply volumes; daily readings are scribed on paper records without any accountability controls to confirm data accuracy and the absence of errors and data gaps in recorded volumes. Written agreement requires meter accuracy testing but is vague on the details of how and who conducts the testing.	Conditions between 2 and 4	Exported metered flow data is logged automatically in electronic format and reviewed at least on a monthly basis, with necessary corrections implemented. Meter data is adjusted by the utility selling (exporting) the water when gross data errors are detected. A coherent data trail exists for this process to protect both the utility exporting the water and the purchasing Utility. Written agreement exists and clearly states requirements and roles for meter accuracy testing and data management.	Conditions between 4 and 6	Hourly exported supply metered data is logged automatically & reviewed on at least a weekly basis by the utility selling the water. Data is adjusted to correct gross error when meter/instrumentation equipment malfunction is detected; and to correct for error found by meter accuracy testing. Any data gaps in the archived data are detected and corrected during the weekly review. A coherent data trail exists for this process to protect both the selling (exporting) utility and the purchasing Utility.	Conditions between 6 and 8	Continuous exported supply metered flow data is logged automatically & reviewed each business day by the utility selling (exporting) the water. Data is adjusted to correct gross error from detected meter/instrumentation equipment malfunction and any error confirmed by meter accuracy testing. Any data errors/gaps are detected and corrected on a daily basis. A data trail exists for the process to protect both the selling (exporting) Utility and the purchasing Utility.	Conditions between 8 and 10	Computerized system (SCADA or similar) automatically records data which is reviewed each business day by the utility selling (exporting) the water. Tight accountability controls ensure that all error/data gaps that occur in the archived flow data are quickly detected and corrected. A reliable data trail exists and contract provisions for meter testing and data management are reviewed by the selling Utility and purchasing Utility at least once every five years.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Improvements to attain higher data grading for "Water exported master meter and supply error adjustment" component:		to qualify for 2: Develop a plan to restructure recordkeeping system to capture all flow data; set a procedure to review flow data on a daily basis to detect input errors. Obtain more reliable information about existing meters by conducting field inspections of meters and related instrumentation, and obtaining manufacturer literature. Review the written agreement between the utility selling (exporting) the water and the purchasing Utility.	to qualify for 4: Install automatic datalogging equipment on exported supply meters. Set a procedure to review this data on a monthly basis to detect gross anomalies and data gaps. Launch discussions with the purchasing utilities to jointly review terms of the written agreements regarding meter accuracy testing and data management; revise the terms as necessary.		to qualify for 6: Refine computerized data collection and archive to include hourly exported supply metered flow data that is reviewed at least on a weekly basis to detect specific data anomalies and gaps. Make necessary corrections to errors/data errors on a weekly basis.		to qualify for 8: Ensure that all exported metered flow data is collected and archived on at least an hourly basis. All data is reviewed and errors/data gaps are corrected each business day.		to qualify for 10: Conduct accountability checks to confirm that all exported metered flow data is reviewed and corrected each business day by the utility selling the water. Results of all meter accuracy tests and data corrections should be available for sharing between the utility and the purchasing Utility. Establish a schedule for a regular review and updating of the contractual language in the written agreements with the purchasing utilities; at least every five years.		to maintain 10: Monitor meter innovations for development of more accurate and less expensive flowmeters; work with the purchasing utilities to help identify meter replacement needs. Keep communication lines with the purchasing utilities open and maintain productive relations. Keep the written agreement current with clear and explicit language that meets the ongoing needs of all parties.
AUTHORIZED CONSUMPTION											
Billed metered:	n/a (not applicable). Select n/a only if the entire customer population is not metered and is billed for water service on a flat or fixed rate basis. In such a case the volume entered must be zero.	Less than 50% of customers with volume-based billings from meter readings; flat or fixed rate billing exists for the majority of the customer population	At least 50% of customers with volume-based billing from meter reads; flat rate billing for others. Manual meter reading is conducted, with less than 50% meter read success rate, remainding accounts' consumption is estimated. Limited meter records, no regular meter testing or replacement. Billing data maintained on paper records, with no auditing.	Conditions between 2 and 4	At least 75% of customers with volume-based, billing from meter reads; flat or fixed rate billing for remaining accounts. Manual meter reading is conducted with at least 50% meter read success rate; consumption for accounts with failed reads is estimated. Purchase records verify age of customer meters; only very limited meter accuracy testing is conducted. Customer meters are replaced only upon complete failure. Computerized billing records exist, but only sporadic internal auditing conducted.	Conditions between 4 and 6	At least 90% of customers with volume-based billing from meter reads; consumption for remaining accounts is estimated. Manual customer meter reading gives at least 80% customer meter reading success rate; consumption for accounts with failed reads is estimated. Good customer meter records eixst, but only limited meter accuracy testing is conducted. Regular replacement is conducted for the oldest meters. Computerized billing records exist with annual auditing of summary statistics conducting by utility personnel.	Conditions between 6 and 8	At least 97% of customers exist with volume-based billing from meter reads. At least 90% customer meter reading success rate; or at least 80% read success rate with planning and budgeting for trials of Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) in one or more pilot areas. Good customer meter records. Regular meter accuracy testing guides replacement of statistically significant number of meters each year. Routine auditing of computerized billing records for global and detailed statistics occurs annually by utility personnel, and is verified by third party at least once every five years.	Conditions between 8 and 10	At least 99% of customers exist with volume-based billing from meter reads. At least 95% customer meter reading success rate; or minimum 80% meter reading success rate, with Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) trials underway. Statistically significant customer meter testing and replacement program in place on a continuous basis. Computerized billing with routine, detailed auditing, including field investigation of representative sample of accounts undertaken annually by utility personnel. Audit is conducted by third party auditors at least once every three years.
Improvements to attain higher data grading for "Billed Metered Consumption" component:	If n/a is selected because the customer meter population is unmetered, consider establishing a new policy to meter the customer population and employ water rates based upon metered volumes.	to qualify for 2: Conduct investigations or trials of customer meters to select appropriate meter models. Budget funding for meter installations. Investigate volume based water rate structures.	to qualify for 4: Purchase and install meters on unmetered accounts. Implement policies to improve meter reading success. Catalog meter information during meter read visits to identify age/model of existing meters. Test a minimal number of meters for accuracy. Install computerized billing system.		to qualify for 6: Purchase and install meters on unmetered accounts. Eliminate flat fee billing and establish appropriate water rate structure based upon measured consumption. Continue to achieve verifiable success in removing manual meter reading barriers. Expand meter accuracy testing. Launch regular meter replacement program. Launch a program of annual auditing of global billing statistics by utility personnel.		to qualify for 8: Purchase and install meters on unmetered accounts. If customer meter reading success rate is less than 97%, assess cost-effectiveness of Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) system for portion or entire system; or otherwise achieve ongoing improvements in manual meter reading success rate to 97% or higher. Refine meter accuracy testing program. Set meter replacement goals based upon accuracy test results. Implement annual auditing of detailed billing records by utility personnel and implement third party auditing at least once every five years.		to qualify for 10: Purchase and install meters on unmetered accounts. Launch Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) system trials if manual meter reading success rate of at least 99% is not achieved within a five-year program. Continue meter accuracy testing program. Conduct planning and budgeting for large scale meter replacement based upon meter life cycle analysis using cumulative flow target. Continue annual detailed billing data auditing by utility personnel and conduct third party auditing at least once every three years.		to maintain 10: Continue annual internal billing data auditing, and third party auditing at least every three years. Continue customer meter accuracy testing to ensure that accurate customer meter readings are obtained and entered as the basis for volume based billing. Stay abreast of improvements in Automatic Meter Reading (AMR) and Advanced Metering Infrastructure (AMI) and information management. Plan and budget for justified upgrades in metering, meter reading and billing data management to maintain very high accuracy in customer metering and billing.
Billed unmetered:	Select n/a if it is the policy of the water utility to meter all customer connections and it has been confirmed by detailed auditing that all customers do indeed have a water meter; i.e. no intentionally unmetered accounts exist	Water utility policy does not require customer metering; flat or fixed fee billing is employed. No data is collected on customer consumption. The only estimates of customer population consumption available are derived from data estimation methods using average fixture count multiplied by number of connections, or similar approach.	Water utility policy does not require customer metering; flat or fixed fee billing is employed. Some metered accounts exist in parts of the system (pilot areas or District Metered Areas) with consumption read periodically or recorded on portable dataloggers over one, three, or seven day periods. Data from these sample meters are used to infer consumption for the total customer population. Site specific estimation methods are used for unusual buildings/water uses.	Conditions between 2 and 4	Water utility policy does require metering and volume based billing in general. However, a liberal amount of exemptions and a lack of clearly written and communicated procedures result in up to 20% of billed accounts believed to be unmetered by exemption; or the water utility is in transition to becoming fully metered, and a large number of customers remain unmetered. A rough estimate of the annual consumption for all unmetered accounts is included in the annual water audit, with no inspection of individual unmetered accounts.	Conditions between 4 and 6	Water utility policy does require metering and volume based billing but established exemptions exist for a portion of accounts such as municipal buildings. As many as 15% of billed accounts are unmetered due to this exemption or meter installation difficulties. Only a group estimate of annual consumption for all unmetered accounts is included in the annual water audit, with no inspection of individual unmetered accounts.	Conditions between 6 and 8	Water utility policy does require metering and volume based billing for all customer accounts. However, less than 5% of billed accounts remain unmetered because meter installation is hindered by unusual circumstances. The goal is to minimize the number of unmetered accounts. Reliable estimates of consumption are obtained for these unmetered accounts via site specific estimation methods.	Conditions between 8 and 10	Water utility policy does require metering and volume based billing for all customer accounts. Less than 2% of billed accounts are unmetered and exist because meter installation is hindered by unusual circumstances. The goal exists to minimize the number of unmetered accounts to the extent that is economical. Reliable estimates of consumption are obtained at these accounts via site specific estimation methods.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Improvements to attain higher data grading for "Billed Unmetered Consumption" component:		to qualify for 2: Conduct research and evaluate cost/benefit of a new water utility policy to require metering of the customer population; thereby greatly reducing or eliminating unmetered accounts. Conduct pilot metering project by installing water meters in small sample of customer accounts and periodically reading the meters or datalogging the water consumption over one, three, or seven day periods.	to qualify for 4: Implement a new water utility policy requiring customer metering. Launch or expand pilot metering study to include several different meter types, which will provide data for economic assessment of full scale metering options. Assess sites with access difficulties to devise means to obtain water consumption volumes. Begin customer meter installation.		to qualify for 6: Refine policy and procedures to improve customer metering participation for all but solidly exempt accounts. Assign staff resources to review billing records to identify errant unmetered properties. Specify metering needs and funding requirements to install sufficient meters to significant reduce the number of unmetered accounts		to qualify for 8: Push to install customer meters on a full scale basis. Refine metering policy and procedures to ensure that all accounts, including municipal properties, are designated for meters. Plan special efforts to address "hard-to-access" accounts. Implement procedures to obtain a reliable consumption estimate for the remaining few unmetered accounts awaiting meter installation.		to qualify for 10: Continue customer meter installation throughout the service area, with a goal to minimize unmetered accounts. Sustain the effort to investigate accounts with access difficulties, and devise means to install water meters or otherwise measure water consumption.		to maintain 10: Continue to refine estimation methods for unmetered consumption and explore means to establish metering, for as many billed remaining unmetered accounts as is economically feasible.
Unbilled metered:	select n/a if all billing-exempt consumption is unmetered.	Billing practices exempt certain accounts, such as municipal buildings, but written policies do not exist; and a reliable count of unbilled metered accounts is unavailable. Meter upkeep and meter reading on these accounts is rare and not considered a priority. Due to poor recordkeeping and lack of auditing, water consumption for all such accounts is purely guesstimated.	Billing practices exempt certain accounts, such as municipal buildings, but only scattered, dated written directives exist to justify this practice. A reliable count of unbilled metered accounts is unavailable. Sporadic meter replacement and meter reading occurs on an as-needed basis. The total annual water consumption for all unbilled, metered accounts is estimated based upon approximating the number of accounts and assigning consumption from actively billed accounts of same meter size.	Conditions between 2 and 4	Dated written procedures permit billing exemption for specific accounts, such as municipal properties, but are unclear regarding certain other types of accounts. Meter reading is given low priority and is sporadic. Consumption is quantified from meter readings where available. The total number of unbilled, unmetered accounts must be estimated along with consumption volumes.	Conditions between 4 and 6	Written policies regarding billing exemptions exist but adherence in practice is questionable. Metering and meter reading for municipal buildings is reliable but sporadic for other unbilled metered accounts. Periodic auditing of such accounts is conducted. Water consumption is quantified directly from meter readings where available, but the majority of the consumption is estimated.	Conditions between 6 and 8	Written policy identifies the types of accounts granted a billing exemption. Customer meter management and meter reading are considered secondary priorities, but meter reading is conducted at least annually to obtain consumption volumes for the annual water audit. High level auditing of billing records ensures that a reliable census of such accounts exists.	Conditions between 8 and 10	Clearly written policy identifies the types of accounts given a billing exemption, with emphasis on keeping such accounts to a minimum. Customer meter management and meter reading for these accounts is given proper priority and is reliably conducted. Regular auditing confirms this. Total water consumption for these accounts is taken from reliable readings from accurate meters.
Improvements to attain higher data grading for "Unbilled Metered Consumption" component:		to qualify for 2: Reassess the water utility's policy allowing certain accounts to be granted a billing exemption. Draft an outline of a new written policy for billing exemptions, with clear justification as to why any accounts should be exempt from billing, and with the intention to keep the number of such accounts to a minimum.	to qualify for 4: Review historic written directives and policy documents allowing certain accounts to be billing-exempt. Draft an outline of a written policy for billing exemptions, identify criteria that grants an exemption, with a goal of keeping this number of accounts to a minimum. Consider increasing the priority of reading meters on unbilled accounts at least annually.		to qualify for 6: Draft a new written policy regarding billing exemptions based upon consensus criteria allowing this occurrence. Assign resources to audit meter records and billing records to obtain census of unbilled metered accounts. Gradually include a greater number of these metered accounts to the routes for regular meter reading.		to qualify for 8: Communicate billing exemption policy throughout the organization and implement procedures that ensure proper account management. Conduct inspections of accounts confirmed in unbilled metered status and verify that accurate meters exist and are scheduled for routine meter readings. Gradually increase the number of unbilled metered accounts that are included in regular meter reading routes.		to qualify for 10: Ensure that meter management (meter accuracy testing, meter replacement) and meter reading activities for unbilled accounts are accorded the same priority as billed accounts. Establish ongoing annual auditing process to ensure that water consumption is reliably collected and provided to the annual water audit process.		to maintain 10: Reassess the utility's philosophy in allowing any water uses to go "unbilled". It is possible to meter and bill all accounts, even if the fee charged for water consumption is discounted or waived. Metering and billing all accounts ensures that water consumption is tracked and water waste from plumbing leaks is detected and minimized.
Unbilled unmetered:		Extent of unbilled, unmetered consumption is unknown due to unclear policies and poor recordkeeping. Total consumption is quantified based upon a purely subjective estimate.	Clear extent of unbilled, unmetered consumption is unknown, but a number of events are randomly documented each year, confirming existence of such consumption, but without sufficient documentation to quantify an accurate estimate of the annual volume consumed.	Conditions between 2 and 4	Extent of unbilled, unmetered consumption is partially known, and procedures exist to document certain events such as miscellaneous fire hydrant uses. Formulae is used to quantify the consumption from such events (time running multiplied by typical flowrate, multiplied by number of events).	Default value of 1.25% of system input volume is employed	Coherent policies exist for some forms of unbilled, unmetered consumption but others await closer evaluation. Reasonable recordkeeping for the managed uses exists and allows for annual volumes to be quantified by inference, but unsupervised uses are guesstimated.	Conditions between 6 and 8	Clear policies and good recordkeeping exist for some uses (ex: water used in periodic testing of unmetered fire connections), but other uses (ex: miscellaneous uses of fire hydrants) have limited oversight. Total consumption is a mix of well quantified use such as from formulae (time running multiplied by typical flow, multiplied by number of events) or temporary meters, and relatively subjective estimates of less regulated use.	Conditions between 8 and 10	Clear policies exist to identify permitted use of water in unbilled, unmetered fashion, with the intention of minimizing this type of consumption. Good records document each occurrence and consumption is quantified via formulae (time running multiplied by typical flow, multiplied by number of events) or use of temporary meters.
Improvements to attain higher data grading for "Unbilled Unmetered Consumption" component:		to qualify for 5: Utilize the accepted default value of 1.25% of the volume of water supplied as an expedient means to gain a reasonable quantification of this use. to qualify for 2: Establish a policy regarding what water uses should be allowed to remain as unbilled and unmetered. Consider tracking a small sample of one such use (ex: fire hydrant flushings).	to qualify for 5: Utilize accepted default value of 1.25% of the volume of water supplied as an expedient means to gain a reasonable quantification of this use. to qualify for 4: Evaluate the documentation of events that have been observed. Meet with user groups (ex: for fire hydrants - fire departments, contractors to ascertain their need and/or volume requirements for water from fire hydrants).		to qualify for 5: Utilize accepted default value of 1.25% of the volume of water supplied as an expedient means to gain a reasonable quantification of all such use. This is particularly appropriate for water utilities who are in the early stages of the water auditing process, and should focus on other components since the volume of unbilled, umetered consumption is usually a relatively small quatity component, and other larger-quantity components should take priority.	to qualify for 6 or greater: Finalize policy and begin to conduct field checks to better establish and quantify such usage. Proceed if top-down audit exists and/or a great volume of such use is suspected.	to qualify for 8: Assess water utility policy and procedures for various unmetered usages. For example, ensure that a policy exists and permits are issued for use of fire hydrants by persons outside of the utility. Create written procedures for use and documentation of fire hydrants by water utility personnel. Use same approach for other types of unbilled, unmetered water usage.		to qualify for 10: Refine written procedures to ensure that all uses of unbilled, unmetered water are overseen by a structured permitting process managed by water utility personnel. Reassess policy to determine if some of these uses have value in being converted to billed and/or metered status.		to maintain 10: Continue to refine policy and procedures with intention of reducing the number of allowable uses of water in unbilled and unmetered fashion. Any uses that can feasibly become billed and metered should be converted eventually.
APPARENT LOSSES											

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Unauthorized consumption:		Extent of unauthorized consumption is unknown due to unclear policies and poor recordkeeping. Total unauthorized consumption is guesstimated.	Unauthorized consumption is a known occurrence, but its extent is a mystery. There are no requirements to document observed events, but periodic field reports capture some of these occurrences. Total unauthorized consumption is approximated from this limited data.	conditions between 2 and 4	Procedures exist to document some unauthorized consumption such as observed unauthorized fire hydrant openings. Use formulae to quantify this consumption (time running multiplied typical flowrate, multiplied by number of events).	Default value of 0.25% of volume of water supplied is employed	Coherent policies exist for some forms of unauthorized consumption (more than simply fire hydrant misuse) but others await closer evaluation. Reasonable surveillance and recordkeeping exist for occurrences that fall under the policy. Volumes quantified by inference from these records.	Conditions between 6 and 8	Clear policies and good auditable recordkeeping exist for certain events (ex: tampering with water meters, illegal bypasses of customer meters); but other occurrences have limited oversight. Total consumption is a combination of volumes from formulae (time x typical flow) and subjective estimates of unconfirmed consumption.	Conditions between 8 and 10	Clear policies exist to identify all known unauthorized uses of water. Staff and procedures exist to provide enforcement of policies and detect violations. Each occurrence is recorded and quantified via formulae (estimated time running multiplied by typical flow) or similar methods. All records and calculations should exist in a form that can be audited by a third party.
Improvements to attain higher data grading for "Unauthorized Consumption" component:		to qualify for 5: Use accepted default of 0.25% of volume of water supplied. to qualify for 2: Review utility policy regarding what water uses are considered unauthorized, and consider tracking a small sample of one such occurrence (ex: unauthorized fire hydrant openings)	to qualify for 5: Use accepted default of 0.25% of system input volume to qualify for 4: Review utility policy regarding what water uses are considered unauthorized, and consider tracking a small sample of one such occurrence (ex: unauthorized fire hydrant openings)		to qualify for 5: Utilize accepted default value of 0.25% of volume of water supplied as an expedient means to gain a reasonable quantification of all such use. This is particularly appropriate for water utilities who are in the early stages of the water auditing process.	to qualify for 6 or greater: Finalize policy updates to clearly identify the types of water consumption that are authorized from those usages that fall outside of this policy and are, therefore, unauthorized. Begin to conduct regular field checks. Proceed if the top-down audit already exists and/or a great volume of such use is suspected.	to qualify for 8: Assess water utility policies to ensure that all known occurrences of unauthorized consumption are outlawed, and that appropriate penalties are prescribed. Create written procedures for detection and documentation of various occurrences of unauthorized consumption as they are uncovered.		to qualify for 10: Refine written procedures and assign staff to seek out likely occurrences of unauthorized consumption. Explore new locking devices, monitors and other technologies designed to detect and thwart unauthorized consumption.		to maintain 10: Continue to refine policy and procedures to eliminate any loopholes that allow or tacitly encourage unauthorized consumption. Continue to be vigilant in detection, documentation and enforcement efforts.
Customer metering inaccuracies:	select n/a only if the entire customer population is unmetered. In such a case the volume entered must be zero.	Customer meters exist, but with unorganized paper records on meters; no meter accuracy testing or meter replacement program for any size of retail meter. Metering workflow is driven chaotically with no proactive management. Loss volume due to aggregate meter inaccuracy is guesstimated.	Poor recordkeeping and meter oversight is recognized by water utility management who has allotted staff and funding resources to organize improved recordkeeping and start meter accuracy testing. Existing paper records gathered and organized to provide cursory disposition of meter population. Customer meters are tested for accuracy only upon customer request.	Conditions between 2 and 4	Reliable recordkeeping exists; meter information is improving as meters are replaced. Meter accuracy testing is conducted annually for a small number of meters (more than just customer requests, but less than 1% of inventory). A limited number of the oldest meters are replaced each year. Inaccuracy volume is largely an estimate, but refined based upon limited testing data.	Conditions between 4 and 6	A reliable electronic recordkeeping system for meters exists. The meter population includes a mix of new high performing meters and dated meters with suspect accuracy. Routine, but limited, meter accuracy testing and meter replacement occur. Inaccuracy volume is quantified using a mix of reliable and less certain data.	Conditions between 6 and 8	Ongoing meter replacement and accuracy testing result in highly accurate customer meter population. Testing is conducted on samples of meters of varying age and accumulated volume of throughput to determine optimum replacement time for various types of meters.	Ongoing meter replacement and accuracy testing result in highly accurate customer meter population. Statistically significant number of meters are tested in audit year. This testing is conducted on samples of meters of varying age and accumulated volume of throughput to determine optimum replacement time for these meters.	Good records of all active customer meters exist and include as a minimum: meter number, account number/location, type, size and manufacturer. Ongoing meter replacement occurs according to a targeted and justified basis. Regular meter accuracy testing gives a reliable measure of composite inaccuracy volume for the customer meter population. New metering technology is embraced to keep overall accuracy improving. Procedures are reviewed by a third party knowledgeable in the M36 methodology.
Improvements to attain higher data grading for "Customer meter inaccuracy volume" component:	If n/a is selected because the customer meter population is unmetered, consider establishing a new policy to meter the customer population and employ water rates based upon metered volumes.	to qualify for 2: Gather available meter purchase records. Conduct testing on a small number of meters believed to be the most inaccurate. Review staffing needs of the metering group and budget for necessary resources to better organize meter management.	to qualify for 4: Implement a reliable record keeping system for customer meter histories, preferably using electronic methods typically linked to, or part of, the Customer Billing System or Customer Information System. Expand meter accuracy testing to a larger group of meters.		to qualify for 6: Standardize the procedures for meter recordkeeping within an electronic information system. Accelerate meter accuracy testing and meter replacements guided by testing results.		to qualify for 8: Expand annual meter accuracy testing to evaluate a statistically significant number of meter makes/models. Expand meter replacement program to replace statistically significant number of poor performing meters each year.		to qualify for 9: Continue efforts to manage meter population with reliable recordkeeping. Test a statistically significant number of meters each year and analyze test results in an ongoing manner to serve as a basis for a target meter replacement strategy based upon accumulated volume throughput.	to qualify for 10: Continue efforts to manage meter population with reliable recordkeeping, meter testing and replacement. Evaluate new meter types and install one or more types in 5-10 customer accounts each year in order to pilot improving metering technology.	to maintain 10: Increase the number of meters tested and replaced as justified by meter accuracy test data. Continually monitor development of new metering technology and Advanced Metering Infrastructure (AMI) to grasp opportunities for greater accuracy in metering of water flow and management of customer consumption data.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Systematic Data Handling Errors:	Note: all water utilities incur some amount of this error. Even in water utilities with unmetered customer populations and fixed rate billing, errors occur in annual billing tabulations. Enter a positive value for the volume and select a grading.	Policies and procedures for activation of new customer water billing accounts are vague and lack accountability. Billing data is maintained on paper records which are not well organized. No auditing is conducted to confirm billing data handling efficiency. An unknown number of customers escape routine billing due to lack of billing process oversight.	Policy and procedures for activation of new customer accounts and oversight of billing records exist but need refinement. Billing data is maintained on paper records or insufficiently capable electronic database. Only periodic unstructured auditing work is conducted to confirm billing data handling efficiency. The volume of unbilled water due to billing lapses is a guess.	Conditions between 2 and 4	Policy and procedures for new account activation and oversight of billing operations exist but needs refinement. Periodic, limited internal audits conducted and confirm with approximate accuracy the consumption volumes lost to billing lapses.	Conditions between 4 and 6	Policy and procedures for new account activation and oversight of billing operations is adequate and reviewed periodically. Computerized billing system is in use with basic reporting available. Any effect of billing adjustments on measured consumption volumes is well understood. Internal checks of billing data error conducted annually. Reasonably accurate quantification of consumption volume lost to billing lapses is obtained.	Conditions between 6 and 8	New account activation and billing operations policy and procedures are reviewed at least biannually. Computerized billing system includes an array of reports to confirm billing data and system functionality. Checks are conducted routinely to flag and explain zero consumption accounts. Annual internal checks conducted with third party audit conducted at least once every five years. Accountability checks flag billing lapses. Consumption lost to billing lapses is well quantified and reducing year-by-year.	Conditions between 8 and 10	Sound written policy and procedures exist for new account activation and oversight of customer billing operations. Robust computerized billing system gives high functionality and reporting capabilities which are utilized, analyzed and the results reported each billing cycle. Assessment of policy and data handling errors are conducted internally and audited by third party at least once every three years, ensuring consumption lost to billing lapses is minimized and detected as it occurs.
Improvements to attain higher data grading for "Systematic Data Handling Error volume" component:		to qualify for 2: Draft written policy and procedures for activating new water billing accounts and oversight of billing operations. Investigate and budget for computerized customer billing system. Conduct initial audit of billing records by flow-charting the basic business processes of the customer account/billing function.	to qualify for 4: Finalize written policy and procedures for activation of new billing acocunts and overall billing operations management. Implement a computerized customer billing system. Conduct initial audit of billing records as part of this process.		to qualify for 6: Refine new account activation and billing operations procedures and ensure consistency with the utility policy regarding billing, and minimize opportunity for missed billings. Upgrade or replace customer billing system for needed functionality - ensure that billing adjustments don't corrupt the value of consumption volumes. Procedurize internal annual audit process.		to qualify for 8: Formalize regular review of new account activation process and general billing practices. Enhance reporting capability of computerized billing system. Formalize regular auditing process to reveal scope of data handling error. Plan for periodic third party audit to occur at least once every five years.		to qualify for 10: Close policy/procedure loopholes that allow some customer accounts to go unbilled, or data handling errors to exist. Ensure that billing system reports are utilized, analyzed and reported every billing cycle. Ensure that internal and third party audits are conducted at least once every three years.		to maintain 10: Stay abreast of customer information management developments and innovations. Monitor developments of Advanced Metering Infrastructure (AMI) and integrate technology to ensure that customer endpoint information is well-monitored and errors/lapses are at an economic minimum.
SYSTEM DATA											
Length of mains:		Poorly assembled and maintained paper as-built records of existing water main installations makes accurate determination of system pipe length impossible. Length of mains is guesstimated.	Paper records in poor or uncertain condition (no annual tracking of installations & abandonments). Poor procedures to ensure that new water mains installed by developers are accurately documented.	Conditions between 2 and 4	Sound written policy and procedures exist for documenting new water main installations, but gaps in management result in a uncertain degree of error in tabulation of mains length.	Conditions between 4 and 6	Sound written policy and procedures exist for permitting and commissioning new water mains. Highly accurate paper records with regular field validation; or electronic records and asset management system in good condition. Includes system backup.	Conditions between 6 and 8	Sound written policy and procedures exist for permitting and commissioning new water mains. Electronic recordkeeping such as a Geographical Information System (GIS) and asset management system are used to store and manage data.	Conditions between 8 and 10	Sound written policy exists for managing water mains extensions and replacements. Geographic Information System (GIS) data and asset management database agree and random field validation proves truth of databases. Records of annual field validation should be available for review.
Improvements to attain higher data grading for "Length of Water Mains" component:		to qualify for 2: Assign personnel to inventory current as-built records and compare with customer billing system records and highway plans in order to verify poorly documented pipelines. Assemble policy documents regarding permitting and documentation of water main installations by the utility and building developers; identify gaps in procedures that result in poor documentation of new water main installations.	to qualify for 4: Complete inventory of paper records of water main installations for several years prior to audit year. Review policy and procedures for commissioning and documenting new water main installation.		to qualify for 6: Finalize updates/improvements to written policy and procedures for permitting/commissioning new main installations. Confirm inventory of records for five years prior to audit year; correct any errors or omissions.		to qualify for 8: Launch random field checks of limited number of locations. Convert to electronic database such as a Geographic Information System (GIS) with backup as justified. Develop written policy and procedures.		to qualify for 10: Link Geographic Information System (GIS) and asset management databases, conduct field verification of data. Record field verification information at least annually.		to maintain 10: Continue with standardization and random field validation to improve the completeness and accuracy of the system.
Number of active AND inactive service connections:		Vague permitting (of new service connections) policy and poor paper recordkeeping of customer connections/billings result in suspect determination of the number of service connections, which may be 10-15% in error from actual count.	General permitting policy exists but paper records, procedural gaps, and weak oversight result in questionable total for number of connections, which may vary 5-10% of actual count.	Conditions between 2 and 4	Written account activation policy and procedures exist, but with some gaps in performance and oversight. Computerized information management system is being brought online to replace dated paper recordkeeping system. Reasonably accurate tracking of service connection installations & abandonments; but count can be up to 5% in error from actual total.	Conditions between 4 and 6	Written new account activation and overall billing policies and procedures are adequate and reviewed periodically. Computerized information management system is in use with annual installations & abandonments totaled. Very limited field verifications and audits. Error in count of number of service connections is believed to be no more than 3%.	Conditions between 6 and 8	Policies and procedures for new account activation and overall billing operations are written, well-structured and reviewed at least biannually. Well-managed computerized information management system exists and routine, periodic field checks and internal system audits are conducted. Counts of connections are no more than 2% in error.	Conditions between 8 and 10	Sound written policy and well managed and audited procedures ensure reliable management of service connection population. Computerized information management system, Customer Billing System, and Geographic Information System (GIS) information agree; field validation proves truth of databases. Count of connections recorded as being in error is less than 1% of the entire population.
Improvements to attain higher data grading for "Number of Active and Inactive Service Connections" component:	**Note: The number of Service Connections does not include fire hydrant leads/lines connecting the hydrant to the water main**	to qualify for 2: Draft new policy and procedures for new account activation and overall billing operations. Research and collect paper records of installations & abandonments for several years prior to audit year.	to qualify for 4: Refine policy and procedures for new account activation and overall billing operations. Research computerized recordkeeping system (Customer Information System or Customer Billing System) to improve documentation format for service connections.		to qualify for 6: Refine procedures to ensure consistency with new account activation and overall billing policy to establish new service connections or decommission existing connections. Improve process to include all totals for at least five years prior to audit year.		to qualify for 8: Formalize regular review of new account activation and overall billing operations policies and procedures. Launch random field checks of limited number of locations. Develop reports and auditing mechanisms for computerized information management system.		to qualify for 10: Close any procedural loopholes that allow installations to go undocumented. Link computerized information management system with Geographic Information System (GIS) and formalize field inspection and information system auditing processes. Documentation of new or decommissioned service connections encounters several levels of checks and balances.		to maintain 10: Continue with standardization and random field validation to improve knowledge of system.
	Note: if customer water	Gradings 1-9 apply if customer properties are unmetered, if customer meters exist and are located inside the customer building premises, or if the water utility owns and is responsible for the entire service connection piping from the water main to the customer building. In any of these cases the average distance between the curb stop or boundary separating utility/customer responsibility for service connection piping, and the typical first point of use (ex: faucet) or the customer meter must be quantified. Gradings of 1-9 are used to grade the validity of the means to quantify this value. (See the "Service Connection Diagram" worksheet)									Either of two conditions can be met for a grading of 10:

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
Average length of customer service line:	meters are located outside of the customer building next to the curb stop or boundary separating utility/customer responsibility, then the auditor should answer "Yes" to the question on the Reporting Worksheet asking about this. If the answer is Yes, the grading description listed under the Grading of 10(a) will be followed, with a value of zero automatically entered at a Grading of 10. See the Service Connection Diagram worksheet for a visual presentation of this distance.	Vague policy exists to define the delineation of water utility ownership and customer ownership of the service connection piping. Curb stops are perceived as the breakpoint but these have not been well-maintained or documented. Most are buried or obscured. Their location varies widely from site-to-site, and estimating this distance is arbitrary due to the unknown location of many curb stops.	Policy requires that the curb stop serves as the delineation point between water utility ownership and customer ownership of the service connection piping. The piping from the water main to the curb stop is the property of the water utility; and the piping from the curb stop to the customer building is owned by the customer. Curb stop locations are not well documented and the average distance is based upon a limited number of locations measured in the field.	Conditions between 2 and 4	Good policy requires that the curb stop serves as the delineation point between water utility ownership and customer ownership of the service connection piping. Curb stops are generally installed as needed and are reasonably documented. Their location varies widely from site-to-site, and an estimate of this distance is hindered by the availability of paper records of limited accuracy.	Conditions between 4 and 6	Clear written policy exists to define utility/customer responsibility for service connection piping. Accurate, well-maintained paper or basic electronic recordkeeping system exists. Periodic field checks confirm piping lengths for a sample of customer properties.	Conditions between 6 and 8	Clearly worded policy standardizes the location of curb stops and meters, which are inspected upon installation. Accurate and well maintained electronic records exist with periodic field checks to confirm locations of service lines, curb stops and customer meter pits. An accurate number of customer properties from the customer billing system allows for reliable averaging of this length.	Conditions between 8 and 10	a) Customer water meters exist outside of customer buildings next to the curb stop or boundary separating utility/customer responsibility for service connection piping. If so, answer "Yes" to the question on the Reporting Working asking about this condition. A value of zero and a Grading of 10 are automatically entered in the Reporting Worksheet . b). Meters exist inside customer buildings, or properties are unmetered. In either case, answer "No" to the Reporting Worksheet question on meter location, and enter a distance determined by the auditor. For a Grading of 10 this value must be a very reliable number from a Geographic Information System (GIS) and confirmed by a statistically valid number of field checks.
Improvements to attain higher data grading for "Average Length of Customer Service Line" component:		to qualify for 2: Research and collect paper records of service line installations. Inspect several sites in the field using pipe locators to locate curb stops. Obtain the length of this small sample of connections in this manner.	to qualify for 4: Formalize and communicate policy delineating utility/customer responsibilities for service connection piping. Assess accuracy of paper records by field inspection of a small sample of service connections using pipe locators as needed. Research the potential migration to a computerized information management system to store service connection data.		to qualify for 6: Establish coherent procedures to ensure that policy for curb stop, meter installation and documentation is followed. Gain consensus within the water utility for the establishment of a computerized information management system.		to qualify for 8: Implement an electronic means of recordkeeping, typically via a customer information system, customer billing system, or Geographic Information System (GIS). Standardize the process to conduct field checks of a limited number of locations.		to qualify for 10: Link customer information management system and Geographic Information System (GIS), standardize process for field verification of data.		to maintain 10: Continue with standardization and random field validation to improve knowledge of service connection configurations and customer meter locations.
Average operating pressure:		Available records are poorly assembled and maintained paper records of supply pump characteristics and water distribution system operating conditions. Average pressure is guesstimated based upon this information and ground elevations from crude topographical maps. Widely varying distribution system pressures due to undulating terrain, high system head loss and weak/erratic pressure controls further compromise the validity of the average pressure calculation.	Limited telemetry monitoring of scattered pumping station and water storage tank sites provides some static pressure data, which is recorded in handwritten logbooks. Pressure data is gathered at individual sites only when low pressure complaints arise. Average pressure is determined by averaging relatively crude data, and is affected by significant variation in ground elevations, system head loss and gaps in pressure controls in the distribution system.	Conditions between 2 and 4	Effective pressure controls separate different pressure zones; moderate pressure variation across the system, occasional open boundary valves are discovered that breech pressure zones. Basic telemetry monitoring of the distribution system logs pressure data electronically. Pressure data gathered by gauges or dataloggers at fire hydrants or buildings when low pressure complaints arise, and during fire flow tests and system flushing. Reliable topographical data exists. Average pressure is calculated using this mix of data.	Conditions between 4 and 6	Reliable pressure controls separate distinct pressure zones; only very occasional open boundary valves are encountered that breech pressure zones. Well-covered telemetry monitoring of the distribution system (not just pumping at source treatment plants or wells) logs extensive pressure data electronically. Pressure gathered by gauges/dataloggers at fire hydrants and buildings when low pressure complaints arise, and during fire flow tests and system flushing. Average pressure is determined by using this mix of reliable data.	Conditions between 6 and 8	Well-managed, discrete pressure zones exist with generally predictable pressure fluctuations. A current full-scale SCADA System or similar realtime monitoring system exists to monitor the water distribution system and collect data, including real time pressure readings at representative sites across the system. The average system pressure is determined from reliable monitoring system data.	Conditions between 8 and 10	Well-managed pressure districts/zones, SCADA System and hydraulic model exist to give very precise pressure data across the water distribution system. Average system pressure is reliably calculated from extensive, reliable, and cross-checked data. Calculations are reported on an annual basis as a minimum.
Improvements to attain higher data grading for "Average Operating Pressure" component:		to qualify for 2: Employ pressure gauging and/or datalogging equipment to obtain pressure measurements from fire hydrants. Locate accurate topographical maps of service area in order to confirm ground elevations. Research pump data sheets to find pump pressure/flow characteristics	to qualify for 4: Formalize a procedure to use pressure gauging/datalogging equipment to gather pressure data during various system events such as low pressure complaints, or operational testing. Gather pump pressure and flow data at different flow regimes. Identify faulty pressure controls (pressure reducing valves, altitude valves, partially open boundary valves) and plan to properly configure pressure zones. Make all pressure data from these efforts available to generate system-wide average pressure.		to qualify for 6: Expand the use of pressure gauging/datalogging equipment to gather scattered pressure data at a representative set of sites, based upon pressure zones or areas. Utilize pump pressure and flow data to determine supply head entering each pressure zone or district. Correct any faulty pressure controls (pressure reducing valves, altitude valves, partially open boundary valves) to ensure properly configured pressure zones. Use expanded pressure dataset from these activities to generate system-wide average pressure.		to qualify for 8: Install a Supervisory Control and Data Acquisition (SCADA) System, or similar realtime monitoring system, to monitor system parameters and control operations. Set regular calibration schedule for instrumentation to insure data accuracy. Obtain accurate topographical data and utilize pressure data gathered from field surveys to provide extensive, reliable data for pressure averaging.		to qualify for 10: Annually, obtain a system-wide average pressure value from the hydraulic model of the distribution system that has been calibrated via field measurements in the water distribution system and confirmed in comparisons with SCADA System data.		to maintain 10: Continue to refine the hydraulic model of the distribution system and consider linking it with SCADA System for real-time pressure data calibration, and averaging.

Grading >>>	n/a	1	2	3	4	5	6	7	8	9	10
COST DATA											
Total annual cost of operating water system:		Incomplete paper records and lack of financial accounting documentation on many operating functions makes calculation of water system operating costs a pure guesstimate	Reasonably maintained, but incomplete, paper or electronic accounting provides data to estimate the major portion of water system operating costs.	Conditions between 2 and 4	Electronic, industry-standard cost accounting system in place. However, gaps in data are known to exist, periodic internal reviews are conducted but not a structured financial audit.	Conditions between 4 and 6	Reliable electronic, industry-standard cost accounting system in place, with all pertinent water system operating costs tracked. Data audited periodically by utility personnel, but not a Certified Public Accountant (CPA).	Conditions between 6 and 8	Reliable electronic, industry-standard cost accounting system in place, with all pertinent water system operating costs tracked. Data audited at least annually by utility personnel, and at least once every three years by third-party CPA.	Conditions between 8 and 10	Reliable electronic, industry-standard cost accounting system in place, with all pertinent water system operating costs tracked. Data audited annually by utility personnel and annually also by third-party CPA.
Improvements to attain higher data grading for "Total Annual Cost of Operating the Water System" component:		to qualify for 2: Gather available records, institute new financial accounting procedures to regularly collect and audit basic cost data of most important operations functions.	to qualify for 4: Implement an electronic cost accounting system, structured according to accounting standards for water utilities		to qualify for 6: Establish process for periodic internal audit of water system operating costs; identify cost data gaps and institute procedures for tracking these outstanding costs.		to qualify for 8: Standardize the process to conduct routine financial audit on an annual basis. Arrange for CPA audit of financial records at least once every three years.		to qualify for 10: Standardize the process to conduct a third-party financial audit by a CPA on an annual basis.		to maintain 10: Maintain program, stay abreast of expenses subject to erratic cost changes and long-term cost trend, and budget/track costs proactively
Customer retail unit cost (applied to Apparent Losses):	Customer population unmetered, and/or only a fixed fee is charged for consumption.	Antiquated, cumbersome water rate structure is used, with periodic historic amendments that were poorly documented and implemented; resulting in classes of customers being billed inconsistent charges. The actual composite billing rate likely differs significantly from the published water rate structure, but a lack of auditing leaves the degree of error indeterminate.	Dated, cumbersome water rate structure, not always employed consistently in actual billing operations. The actual composite billing rate is known to differ from the published water rate structure, and a reasonably accurate estimate of the degree of error is determined, allowing a composite billing rate to be quantified.	Conditions between 2 and 4	Straight-forward water rate structure in use, but not updated in several years. Billing operations reliably employ the rate structure. The composite billing rate is derived from a single customer class such as residential customer accounts, neglecting the effect of different rates from varying customer classes.	Conditions between 4 and 6	Clearly written, up-to-date water rate structure is in force and is applied reliably in billing operations. Composite customer rate is determined using a weighted average residential rate using volumes of water in each rate block.	Conditions between 6 and 8	Effective water rate structure is in force and is applied reliably in billing operations. Composite customer rate is determined using a weighted average composite consumption rate, which includes residential, commercial, industrial, institutional (CII), and any other distinct customer classes within the water rate structure.	Conditions between 8 and 10	Current, effective water rate structure is in force and applied reliably in billing operations. The rate structure and calculations of composite rate - which includes residential, commercial, industrial, institutional (CII), and other distinct customer classes - are reviewed by a third party knowledgeable in the M36 methodology at least once every five years.
Improvements to attain higher data grading for "Customer Retail Unit Cost" component:		to qualify for 2: Formalize the process to implement water rates, including a secure documentation procedure. Create a current, formal water rate document and gain approval from all stakeholders.	to qualify for 4: Review the water rate structure and update/formalize as needed. Assess billing operations to ensure that actual billing operations incorporate the established water rate structure.		to qualify for 6: Evaluate volume of water used in each usage block by residential users. Multiply volumes by full rate structure.	Launch effort to fully meter the customer population and charge rates based upon water volumes	to qualify for 8: Evaluate volume of water used in each usage block by all classifications of users. Multiply volumes by full rate structure.		to qualify for 10: Conduct a periodic third-party audit of water used in each usage block by all classifications of users. Multiply volumes by full rate structure.		to maintain 10: Keep water rate structure current in addressing the water utility's revenue needs. Update the calculation of the customer unit rate as new rate components, customer classes, or other components are modified.
Variable production cost (applied to Real Losses):	Note: if the water utility purchases/imports its entire water supply, then enter the unit purchase cost of the bulk water supply in the Reporting Worksheet with a grading of 10	Incomplete paper records and lack of documentation on primary operating functions (electric power and treatment costs most importantly) makes calculation of variable production costs a pure guesstimate	Reasonably maintained, but incomplete, paper or electronic accounting provides data to roughly estimate the basic operations costs (pumping power costs and treatment costs) and calculate a unit variable production cost.	Conditions between 2 and 4	Electronic, industry-standard cost accounting system in place. Electric power and treatment costs are reliably tracked and allow accurate weighted calculation of unit variable production costs based on these two inputs and water imported purchase costs (if applicable). All costs are audited internally on a periodic basis.	Conditions between 4 and 6	Reliable electronic, industry-standard cost accounting system in place, with all pertinent water system operating costs tracked. Pertinent additional costs beyond power, treatment and water imported purchase costs (if applicable) such as liability, residuals management, wear and tear on equipment, impending expansion of supply, are included in the unit variable production cost, as applicable. The data is audited at least annually by utility personnel.	Conditions between 6 and 8	Reliable electronic, industry-standard cost accounting system in place, with all pertinent primary and secondary variable production and water imported purchase (if applicable) costs tracked. The data is audited at least annually by utility personnel, and at least once every three years by a third-party knowledgeable in the M36 methodology.	Conditions between 8 and 10	Either of two conditions can be met to obtain a grading of 10: 1) Third party CPA audit of all pertinent primary and secondary variable production and water imported purchase (if applicable) costs on an annual basis. or: 2) Water supply is entirely purchased as bulk water imported, and the unit purchase cost - including all applicable marginal supply costs - serves as the variable production cost. If all applicable marginal supply costs are not included in this figure, a grade of 10 should not be selected.
Improvements to attain higher data grading for "Variable Production Cost" component:		to qualify for 2: Gather available records, institute new procedures to regularly collect and audit basic cost data and most important operations functions.	to qualify for 4: Implement an electronic cost accounting system, structured according to accounting standards for water utilities		to qualify for 6: Formalize process for regular internal audits of production costs. Assess whether additional costs (liability, residuals management, equipment wear, impending infrastructure expansion) should be included to calculate a more representative variable production cost.		to qualify for 8: Formalize the accounting process to include direct cost components (power, treatment) as well as indirect cost components (liability, residuals management, etc.) Arrange to conduct audits by a knowledgable third-party at least once every three years.		to qualify for 10: Standardize the process to conduct a third-party financial audit by a CPA on an annual basis.		to maintain 10: Maintain program, stay abreast of expenses subject to erratic cost changes and budget/track costs proactively

Average Length of Customer Service Line

The three figures shown on this worksheet display the assignment of the Average Length of Customer Service Line, Lp, for the three most common piping configurations.

Figure 1 shows the configuration of the water meter outside of the customer building next to the curb stop valve. In this configuration Lp = 0 since the distance between the curb stop and the customer metering point is essentially zero.

Figure 2 shows the configuration of the customer water meter located inside the customer building, where Lp is the distance from the curb stop to the water meter.

Figure 3 shows the configuration of an unmetered customer building , where Lp is the distance from the curb stop to the first point of customer water consumption, or, more simply, the building line.

In any water system the Lp will vary notably in a community of different structures, therefore the average Lp value is used and this should be approximated or calculated if a sample of service line measurements has been gathered.

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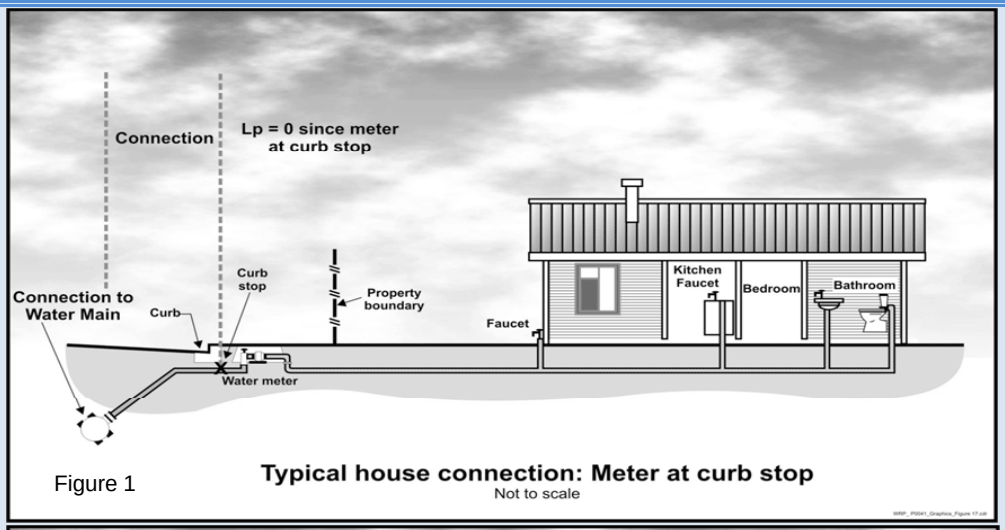


Figure 1 **Typical house connection: Meter at curb stop**
Not to scale

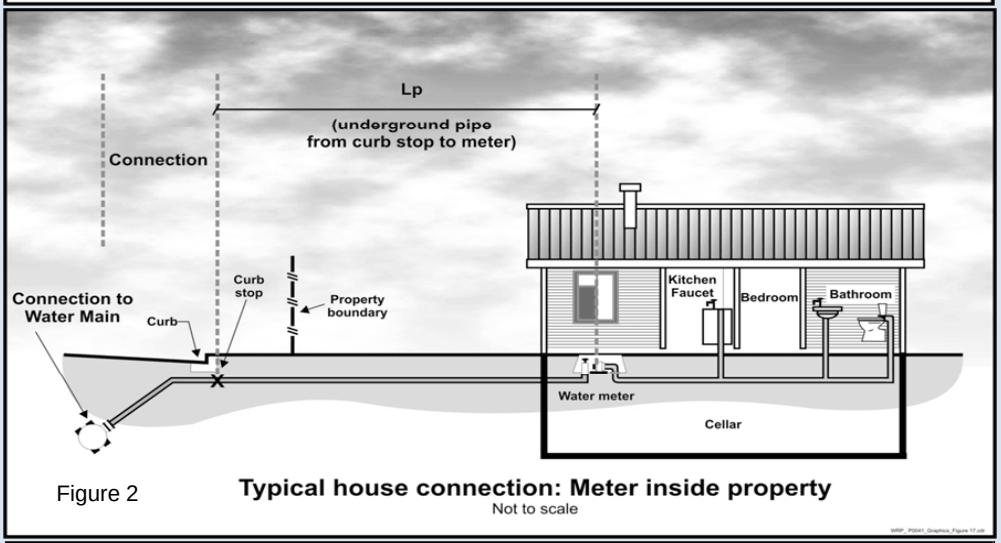


Figure 2 **Typical house connection: Meter inside property**
Not to scale

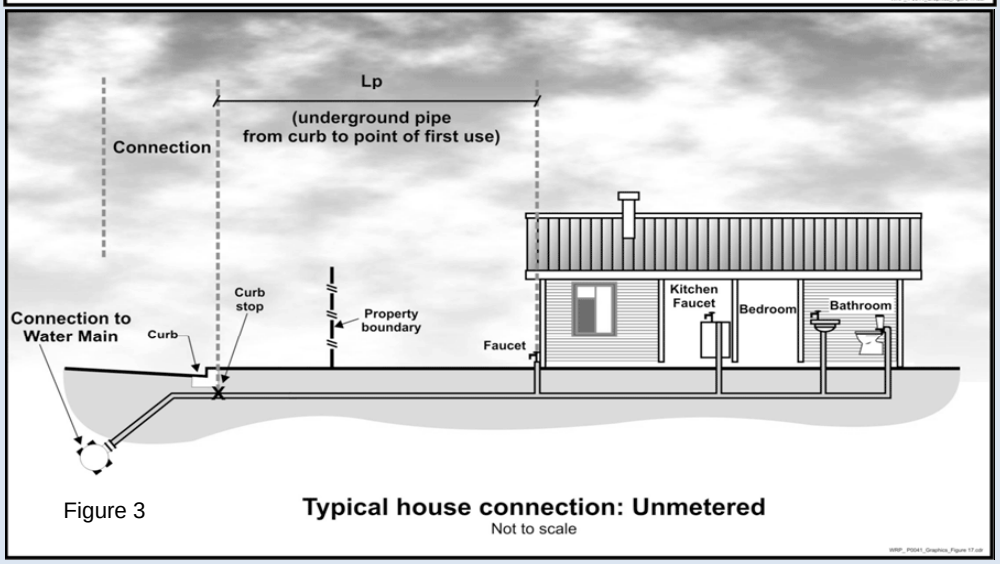


Figure 3 **Typical house connection: Unmetered**
Not to scale

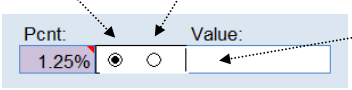
AWWA Free Water Audit Software: Definitions

WAS v5.0

Item Name	Description
Apparent Losses Find	= unauthorized consumption + customer metering inaccuracies + systematic data handling errors Apparent Losses include all types of inaccuracies associated with customer metering (worn meters as well as improperly sized meters or wrong type of meter for the water usage profile) as well as systematic data handling errors (meter reading, billing, archiving and reporting), plus unauthorized consumption (theft or illegal use). NOTE: Over-estimation of Apparent Losses results in under-estimation of Real Losses. Under-estimation of Apparent Losses results in over-estimation of Real Losses.
AUTHORIZED CONSUMPTION Find	= billed water exported + billed metered + billed unmetered + unbilled metered + unbilled unmetered consumption The volume of metered and/or unmetered water taken by registered customers, the water utility's own uses, and uses of others who are implicitly or explicitly authorized to do so by the water utility; for residential, commercial, industrial and public-minded purposes. Typical retail customers' consumption is tabulated usually from established customer accounts as billed metered consumption, or - for unmetered customers - billed unmetered consumption. These types of consumption, along with billed water exported, provide revenue potential for the water utility. **Be certain to tabulate the water exported volume as a separate component and do not "double-count" it by including in the billed metered consumption component as well as the water exported component.** Unbilled authorized consumption occurs typically in non-account uses, including water for fire fighting and training, flushing of water mains and sewers, street cleaning, watering of municipal gardens, public fountains, or similar public-minded uses. Occasionally these uses may be metered and billed (or charged a flat fee), but usually they are unmetered and unbilled. In the latter case, the water auditor may use a default value to estimate this quantity, or implement procedures for the reliable quantification of these uses. This starts with documenting usage events as they occur and estimating the amount of water used in each event. (See Unbilled unmetered consumption)
View Service Connection Diagram **Average length of customer service line** Find	This is the average length of customer service line, Lp, that is owned and maintained by the customer; from the point of ownership transfer to the customer water meter, or building line (if unmetered). The quantity is one of the data inputs for the calculation of Unavoidable Annual Real Losses (UARL), which serves as the denominator of the performance indicator: Infrastructure Leakage Index (ILI). The value of Lp is multiplied by the number of customer service connections to obtain a total length of customer owned piping in the system. The purpose of this parameter is to account for the unmetered service line infrastructure that is the responsibility of the customer for arranging repairs of leaks that occur on their lines. In many cases leak repairs arranged by customers take longer to be executed than leak repairs arranged by the water utility on utility-maintained piping. Leaks run longer - and lose more water - on customer-owned service piping, than utility owned piping. If the customer water meter exists near the ownership transfer point (usually the curb stop located between the water main and the customer premises) this distance is zero because the meter and transfer point are the same. This is the often encountered configuration of customer water meters located in an underground meter box or "pit" outside of the customer's building. The Free Water Audit Software asks a "Yes/No" question about the meter at this location. If the auditor selects "Yes" then this distance is set to zero and the data grading score for this component is set to 10. If water meters are typically located inside the customer premise/building, or properties are unmetered, it is up to the water auditor to estimate a system-wide average Lp length based upon the various customer land parcel sizes and building locations in the service area. Lp will be a shorter length in areas of high density housing, and a longer length in areas of low density housing and varied commercial and industrial buildings. General parcel demographics should be employed to obtain a composite average Lp length for the entire system. Refer to the "Service Connection Diagram" worksheet for a depiction of the service line/metering configurations that typically exist in water utilities. This worksheet gives guidance on the determination of the Average Length, Lp, for each configuration.
Average operating pressure Find	This is the average pressure in the distribution system that is the subject of the water audit. Many water utilities have a calibrated hydraulic model of their water distribution system. For these utilities, the hydraulic model can be utilized to obtain a very accurate quantity of average pressure. In the absence of a hydraulic model, the average pressure may be approximated by obtaining readings of static water pressure from a representative sample of fire hydrants or other system access points evenly located across the system. A weighted average of the pressure can be assembled; but be sure to take into account the elevation of the fire hydrants, which typically exist several feet higher than the level of buried water pipelines. If the water utility is compiling the water audit for the first time, the average pressure can be approximated, but with a low data grading. In subsequent years of auditing, effort should be made to improve the accuracy of the average pressure quantity. This will then qualify the value for a higher data grading.
Billed Authorized Consumption	All consumption that is billed and authorized by the utility. This may include both metered and unmetered consumption. See "Authorized Consumption" for more information.
Billed metered consumption Find	All metered consumption which is billed to retail customers, including all groups of customers such as domestic, commercial, industrial or institutional. **It does NOT include water supplied to neighboring utilities (water exported) which is metered and billed. Be sure to subtract any consumption for exported water sales that may be included in these billing roles. Water supplied as exports to neighboring water utilities should be included only in the Water Exported component.** The metered consumption data can be taken directly from billing records for the water audit period. The accuracy of yearly metered consumption data can be refined by including an adjustment to account for customer meter reading lag time since not all customer meters are read on the same day of the meter reading period. However additional analysis is necessary to determine the lag time adjustment value, which may or may not be significant.
Billed unmetered consumption Find	All billed consumption which is calculated based on estimates or norms from water usage sites that have been determined by utility policy to be left unmetered. This is typically a very small component in systems that maintain a policy to meter their customer population. However, this quantity can be the key consumption component in utilities that have not adopted a universal metering policy. **This component should NOT include any water that is supplied to neighboring utilities (water exported) which is unmetered but billed. Water supplied as exports to neighboring water utilities should be included only in the Water Exported component.**

Item Name	Description
Customer metering inaccuracies Find	Apparent water losses caused by the collective under-registration of customer water meters. Many customer water meters gradually wear as large cumulative volumes of water are passed through them over time. This causes the meters to under-register the flow of water. This occurrence is common with smaller residential meters of sizes 5/8-inch and 3/4 inch after they have registered very large cumulative volumes of water, which generally occurs only after periods of years. For meters sized 1-inch and larger - typical of multi-unit residential, commercial and industrial accounts - meter under-registration can occur from wear or from the improper application of the meter; i.e. installing the wrong type of meter or the wrong size of meter, for the flow pattern (profile) of the consumer. For instance, many larger meters have reduced accuracy at low flows. If an oversized meter is installed, most of the time the routine flow will occur in the low flow range of the meter, and a significant portion of it may not be registered. It is important to properly select and install all meters, but particularly large customer meters, size 1-inch and larger. The auditor has two options for entering data for this component of the audit. The auditor can enter a percentage under-registration (typically an estimated value), this will apply the selected percentage to the two categories of metered consumption to determine the volume of water not recorded due to customer meter inaccuracy. Note that this percentage is a composite average inaccuracy for all customer meters in the entire meter population. The percentage will be multiplied by the sum of the volumes in the Billed Metered and Unbilled Metered components. Alternatively, if the auditor has substantial data from meter testing activities, he or she can calculate their own loss volumes, and this volume may be entered directly. Note that a value of zero will be accepted but an alert will appear asking if the customer population is unmetered. Since all metered systems have some degree of inaccuracy, a positive value should be entered. A value of zero in this component is valid only if the water utility does not meter its customer population.
Customer retail unit cost Find	The Customer Retail Unit Cost represents the charge that customers pay for water service. This unit cost is applied routinely to the components of Apparent Loss, since these losses represent water reaching customers but not (fully) paid for. Since most water utilities have a rate structure that includes a variety of different costs based upon class of customer, a weighted average of individual costs and number of customer accounts in each class can be calculated to determine a single composite cost that should be entered into this cell. Finally, the weighted average cost should also include additional charges for sewer, storm water or biosolids processing, but only if these charges are based upon the volume of potable water consumed. For water utilities in regions with limited water resources and a questionable ability to meet the drinking water demands in the future, the Customer Retail Unit Cost might also be applied to value the Real Losses; instead of applying the Variable Production Cost to Real Losses. In this way, it is assumed that every unit volume of leakage reduced by leakage management activities will be sold to a customer. Note: the Free Water Audit Software allows the user to select the units that are charged to customers (either $/1,000 gallons, $/hundred cubic feet, or $/1,000 litres) and automatically converts these units to the units that appear in the "WATER SUPPLIED" box. The monetary units are United States dollars, $.
Infrastructure Leakage Index (ILI) Find	The ratio of the Current Annual Real Losses (Real Losses) to the Unavoidable Annual Real Losses (UARL). The ILI is a highly effective performance indicator for comparing (benchmarking) the performance of utilities in operational management of real losses.
Length of mains Find	Length of all pipelines (except service connections) in the system starting from the point of system input metering (for example at the outlet of the treatment plant). It is also recommended to include in this measure the total length of fire hydrant lead pipe. Hydrant lead pipe is the pipe branching from the water main to the fire hydrant. Fire hydrant leads are typically of a sufficiently large size that is more representative of a pipeline than a service connection. The average length of hydrant leads across the entire system can be assumed if not known, and multiplied by the number of fire hydrants in the system, which can also be assumed if not known. This value can then be added to the total pipeline length. Total length of mains can therefore be calculated as: Length of Mains, miles = (total pipeline length, miles) + [{(average fire hydrant lead length, ft) x (number of fire hydrants)} / 5,280 ft/mile] or Length of Mains, kilometres = (total pipeline length, kilometres) + [{(average fire hydrant lead length, metres) x (number of fire hydrants)} / 1,000 metres/kilometre]
NON-REVENUE WATER Find	= Apparent Losses + Real Losses + Unbilled Metered Consumption + Unbilled Unmetered Consumption. This is water which does not provide revenue potential to the utility.
Number of active AND inactive service connections Find	Number of customer service connections, extending from the water main to supply water to a customer. Please note that this includes the actual number of distinct piping connections, including fire connections, whether active or inactive. This may differ substantially from the number of customers (or number of accounts). **Note: this number does not include the pipeline leads to fire hydrants - the total length of piping supplying fire hyrants should be included in the "Length of mains" parameter.**
Real Losses Find	Physical water losses from the pressurized system (water mains and customer service connections) and the utility's storage tanks, up to the point of customer consumption. In metered systems this is the customer meter, in unmetered situations this is the first point of consumption (stop tap/tap) within the property. The annual volume lost through all types of leaks, breaks and overflows depends on frequencies, flow rates, and average duration of individual leaks, breaks and overflows.
Revenue Water	Those components of System Input Volume that are billed and have the potential to produce revenue.
Service Connection Density Find	=number of customer service connections / length of mains

Item Name	Description
Systematic data handling errors Find	Apparent losses caused by accounting omissions, errant computer programming, gaps in policy, procedure, and permitting/activation of new accounts; and any type of data lapse that results in under-stated customer water consumption in summary billing reports. **Systematic Data Handling Errors result in a direct loss of revenue potential. Water utilities can find "lost" revenue by keying on this component.** Utilities typically measure water consumption registered by water meters at customer premises. The meter should be read routinely (ex: monthly) and the data transferred to the Customer Billing System, which generates and sends a bill to the customer. Data Transfer Errors result in the consumption value being less than the actual consumption, creating an apparent loss. Such error might occur from illegible and mis-recorded hand-written readings compiled by meter readers, inputting an incorrect meter register unit conversion factor in the automatic meter reading equipment, or a variety of similar errors. Apparent losses also occur from Data Analysis Errors in the archival and data reporting processes of the Customer Billing System. Inaccurate estimates used for accounts that fail to produce a meter reading are a common source of error. Billing adjustments may award customers a rightful monetary credit, but do so by creating a negative value of consumption, thus under-stating the actual consumption. Account activation lapses may allow new buildings to use water for months without meter readings and billing. Poor permitting and construction inspection practices can result in a new building lacking a billing account, a water meter and meter reading; i.e., the customer is unknown to the utility's billing system. Close auditing of the permitting, metering, meter reading, billing and reporting processes of the water consumption data trail can uncover data management gaps that create volumes of systematic data handling error. Utilities should routinely analyze customer billing records to detect data anomalies and quantify these losses. For example, a billing account that registers zero consumption for two or more billing cycles should be checked to explain why usage has seemingly halted. Given the revenue loss impacts of these losses, water utilities are well-justified in providing continuous oversight and timely correction of data transfer errors & data handling errors. If the water auditor has not yet gathered detailed data or assessment of systematic data handling error, it is recommended that the auditor apply the default value of 0.25% of the the Billed Authorized Consumption volume. However, if the auditor has investigated the billing system and its controls, and has well validated data that indicates the volume from systematic data handling error is substantially higher or lower than that generated by the default value, then the auditor should enter a quantity that was derived from the utility investigations and select an appropriate grading. Note: negative values are not allowed for this audit component. If the auditor enters zero for this component then a grading of 1 will be automatically assigned.
Total annual cost of operating the water system Find	These costs include those for operations, maintenance and any annually incurred costs for long-term upkeep of the drinking water supply and distribution system. It should include the costs of day-to-day upkeep and long-term financing such as repayment of capital bonds for infrastructure expansion or improvement. Typical costs include employee salaries and benefits, materials, equipment, insurance, fees, administrative costs and all other costs that exist to sustain the drinking water supply. Depending upon water utility accounting procedures or regulatory agency requirements, it may be appropriate to include depreciation in the total of this cost. This cost should not include any costs to operate wastewater, biosolids or other systems outside of drinking water.
Unauthorized consumption Find	Includes water illegally withdrawn from fire hydrants, illegal connections, bypasses to customer consumption meters, or tampering with metering or meter reading equipment; as well as any other ways to receive water while thwarting the water utility's ability to collect revenue for the water. Unauthorized consumption results in uncaptured revenue and creates an error that understates customer consumption. In most water utilities this volume is low and, if the water auditor has not yet gathered detailed data for these loss occurrences, it is recommended that the auditor apply a default value of 0.25% of the volume of water supplied. However, if the auditor has investigated unauthorized occurrences, and has well validated data that indicates the volume from unauthorized consumption is substantially higher or lower than that generated by the default value, then the auditor should enter a quantity that was derived from the utility investigations. Note that a value of zero will not be accepted since all water utilities have some volume of unauthorized consumption occurring in their system. Note: if the auditor selects the default value for unauthorized consumption, a data grading of 5 is automatically assigned, but not displayed on the Reporting Worksheet.
Unavoidable Annual Real Losses (UARL) Find	UARL (gallons)=(5.41Lm + 0.15Nc + 7.5Lc) xP, or UARL (litres)=(18.0Lm + 0.8Nc + 25.0Lc) xP where: Lm = length of mains (miles or kilometres) Nc = number of customer service connections Lp = the average distance of customer service connection piping (feet or metres) (see the Worksheet "Service Connection Diagram" for guidance on deterring the value of Lp) Lc = total length of customer service connection piping (miles or km) Lc = Nc X Lp (miles or kilometres) P = Pressure (psi or metres) The UARL is a theoretical reference value representing the technical low limit of leakage that could be achieved if all of today's best technology could be successfully applied. It is a key variable in the calculation of the Infrastructure Leakage Index (ILI). Striving to reduce system leakage to a level close to the UARL is usually not needed unless the water supply is unusually expensive, scarce or both. NOTE: The UARL calculation has not yet been proven as fully valid for very small, or low pressure water distribution systems. If, in gallons: (Lm x 32) + Nc < 3000 or P <35psi in litres: (Lm x 20) + Nc < 3000 or P < 25m then the calculated UARL value may not be valid. The software does not display a value of UARL or ILI if either of these conditions is true.

Item Name	Description
Unbilled Authorized Consumption	All consumption that is unbilled, but still authorized by the utility. This includes Unbilled Metered Consumption + Unbilled Unmetered Consumption. See "Authorized Consumption" for more information. For Unbilled Unmetered Consumption, the Free Water Audit Software provides the auditor the option to select a default value if they have not audited unmetered activities in detail. The default calculates a volume that is 1.25% of the Water Supplied volume. If the auditor has carefully audited the various unbilled, unmetered, authorized uses of water, and has established reliable estimates of this collective volume, then he or she may enter the volume directly for this component, and not use the default value.
Unbilled metered consumption Find	Metered consumption which is authorized by the water utility, but, for any reason, is deemed by utility policy to be unbilled. This might for example include metered water consumed by the utility itself in treatment or distribution operations, or metered water provided to civic institutions free of charge. **It does not include water supplied to neighboring utilities (water exported) which may be metered but not billed.**
Unbilled unmetered consumption Find	Any kind of Authorized Consumption which is neither billed or metered. This component typically includes water used in activities such as fire fighting, flushing of water mains and sewers, street cleaning, fire flow tests conducted by the water utility, etc. In most water utilities it is a small component which is very often substantially overestimated. **It does NOT include water supplied to neighboring utilities (water exported) which is unmetered and unbilled – an unlikely case.** This component has many sub-components of water use which are often tedious to identify and quantify. Because of this, and the fact that it is usually a small portion of the water supplied, it is recommended that the auditor apply the default value, which is 1.25% of the Water Supplied volume. Select the default percentage to enter this value. If the water utility has carefully audited the unbilled, unmetered activities occurring in the system, and has well validated data that gives a value substantially higher or lower than the default volume, then the auditor should enter their own volume. However the default approach is recommended for most water utilities. Note that a value of zero is not permitted, since all water utilities have some volume of water in this component occurring in their system.
Units and Conversions	The user may develop an audit based on one of three unit selections: 1) Million Gallons (US) 2) Megalitres (Thousand Cubic Metres) 3) Acre-feet Once this selection has been made in the instructions sheet, all calculations are made on the basis of the chosen units. Should the user wish to make additional conversions, a unit converter is provided below (use drop down menus to select units from the yellow unit boxes): Enter Units: 1 | Convert From… Million Gallons (US) = **Converts to…..** 3.06888329 Acre-feet (conversion factor = 3.06888328973723)
Use of Option Buttons	To use the default percent value choose this button To enter a value choose this button and enter the value in the cell to the right  **NOTE:** For Unbilled Unmetered Consumption, Unauthorized Consumption and Systematic Data Handling Errors, a recommended default value can be applied by selecting the Percent option. The default values are based on fixed percentages of Water Supplied or Billed Authorized Consumption and are recommended for use in this audit unless the auditor has well validated data for their system. Default values are shown by purple cells, as shown in the example above. If a default value is selected, the user does not need to grade the item; a grading value of 5 is automatically applied (however, this grade will not be displayed).
Variable production cost (applied to Real Losses) Find	The cost to produce and supply the next unit of water (e.g., $/million gallons). This cost is determined by calculating the summed unit costs for ground and surface water treatment and all power used for pumping from the source to the customer. It may also include other miscellaneous unit costs that apply to the production of drinking water. It should also include the unit cost of bulk water purchased as an import if applicable. It is common to apply this unit cost to the volume of Real Losses. However, if water resources are strained and the ability to meet future drinking water demands is in question, then the water auditor can be justified in applying the Customer Retail Rate to the Real Loss volume, rather than applying the Variable Production Cost. The Free Water Audit Software applies the Variable Production costs to Real Losses by default. However, the auditor has the option on the Reporting Worksheet to select the Customer Retail Cost as the basis for the Real Loss cost evaluation if the auditor determines that this is warranted.
Volume from own sources Find	The volume of water withdrawn (abstracted) from water resources (rivers, lakes, streams, wells, etc) controlled by the water utility, and then treated for potable water distribution. Most water audits are compiled for utility retail water distribution systems, so this volume should reflect the amount of treated drinking water that entered the distribution system. Often the volume of water measured at the effluent of the treatment works is slightly less than the volume measured at the raw water source, since some of the water is used in the treatment process. Thus, it is useful if flows are metered at the effluent of the treatment works. If metering exists only at the raw water source, an adjustment for water used in the treatment process should be included to account for water consumed in treatment operations such as filter backwashing, basin flushing and cleaning, etc. If the audit is conducted for a wholesale water agency that sells untreated water, then this quantity reflects the measure of the raw water, typically metered at the source.

Item Name	Description
Volume from own sources: Master meter and supply error adjustment Find	An estimate or measure of the degree of inaccuracy that exists in the master (production) meters measuring the annual Volume from own Sources, and any error in the data trail that exists to collect, store and report the summary production data. This adjustment is a weighted average number that represents the collective error for all master meters for all days of the audit year and any errors identified in the data trail. Meter error can occur in different ways. A meter or meters may be inaccurate by under-registering flow (did not capture all the flow), or by over-registering flow (overstated the actual flow). Data error can occur due to data gaps caused by temporary outages of the meter or related instrumentation. All water utilities encounter some degree of inaccuracy in master meters and data errors in archival systems are common; thus a value of zero should not be entered. Enter a negative percentage or value for metered data under-registration; or, enter a positive percentage or value for metered data over-registration.
Water exported Find	The Water Exported volume is the bulk water conveyed and sold by the water utility to neighboring water systems that exists outside of their service area. Typically this water is metered at the custody transfer point of interconnection between the two water utilities. Usually the meter(s) are owned by the water utility that is selling the water: i.e. the exporter. If the water utility who is compiling the annual water audit sells bulk water in this manner, they are an exporter of water. Note: The Water Exported volume is sold to wholesale customers who are typically charged a wholesale rate that is different than retail rates charged to the retail customers existing within the service area. Many state regulatory agencies require that the Water Exported volume be reported to them as a quantity separate and distinct from the retail customer billed consumption. For these reasons - and others - the Water Exported volume is always quantified separately from Billed Authorized Consumption in the standard water audit. **Be certain not to "double-count" this quantity by including it in both the Water Exported box and the Billed Metered Consumption box of the water audit Reporting Worksheet. This volume should be included only in the Water Exported box.**
Water exported: Master meter and supply error adjustment Find	An estimate or measure of the volume in which the Water Exported volume is incorrect. This adjustment is a weighted average that represents the collective error for all of the metered and archived exported flow for all days of the audit year. Meter error can occur in different ways. A meter may be inaccurate by under-registering flow (did not capture all the flow), or by over-registering flow (overstated the actual flow). Error in the metered, archived data can also occur due to data gaps caused by temporary outages of the meter or related instrumentation. All water utilities encounter some degree of error in their metered data, particularly if meters are aged and infrequently tested. Occasional errors also occur in the archived data. Thus, a value of zero should not be entered. Enter a negative percentage or value for metered data under-registration; or enter a positive percentage or value for metered data over-registration. If regular meter accuracy testing is conducted on the meter(s) - which is usually conducted by the water utility selling the water - then the results of this testing can be used to help quantify the meter error adjustment. Corrections to data gaps or other errors found in the archived data should also be included as a portion of this meter error adjustment.
Water imported Find	The Water Imported volume is the bulk water purchased to become part of the Water Supplied volume. Typically this is water purchased from a neighboring water utility or regional water authority, and is metered at the custody transfer point of interconnection between the two water utilities. Usually the meter(s) are owned by the water supplier selling the water to the utility conducting the water audit. The water supplier selling the bulk water usually charges the receiving utility based upon a wholesale water rate.
Water imported: Master meter and supply error adjustment Find	An estimate or measure of the volume in which the Water Imported volume is incorrect. This adjustment is a weighted average that represents the collective error for all of the metered and archived imported flow for all days of the audit year. Meter error can occur in different ways. A meter may be inaccurate by under-registering flow (did not capture all the flow), or by over-registering flow (overstated the actual flow). Error in the metered, archived data can also occur due to data gaps caused by temporary outages of the meter or related instrumentation. All water utilities encounter some level of meter inaccuracy, particularly if meters are aged and infrequently tested. Occasional errors also occur in the archived metered data. Thus, a value of zero should not be entered. Enter a negative percentage or value for metered data under-registration; or, enter a positive percentage or value for metered data over-registration. If regular meter accuracy testing is conducted on the meter(s) - which is usually conducted by the water utility selling the water - then the results of this testing can be used to help quantify the meter error adjustment.
WATER LOSSES Find	= apparent losses + real losses Water Losses are the difference between Water Supplied and Authorized Consumption. Water losses can be considered as a total volume for the whole system, or for partial systems such as transmission systems, pressure zones or district metered areas (DMA); if one of these configurations are the basis of the water audit.

AWWA Free Water Audit Software:
Determining Water Loss Standing

WAS v5.0

Water Audit Report for: City of Lakewood
Reporting Year: 2015 | 1/2015 - 12/2015
Data Validity Score: **76**

Water Loss Control Planning Guide

	Water Audit Data Validity Level / Score				
Functional Focus Area	**Level I** (0-25)	**Level II** (26-50)	**Level III** (51-70)	**Level IV** (71-90)	**Level V** (91-100)
Audit Data Collection	Launch auditing and loss control team; address production metering deficiencies	Analyze business process for customer metering and billing functions and water supply operations. Identify data gaps.	Establish/revise policies and procedures for data collection	Refine data collection practices and establish as routine business process	Annual water audit is a reliable gauge of year-to-year water efficiency standing
Short-term loss control	Research information on leak detection programs. Begin flowcharting analysis of customer billing system	Conduct loss assessment investigations on a sample portion of the system: customer meter testing, leak survey, unauthorized consumption, etc.	Establish ongoing mechanisms for customer meter accuracy testing, active leakage control and infrastructure monitoring	Refine, enhance or expand ongoing programs based upon economic justification	Stay abreast of improvements in metering, meter reading, billing, leakage management and infrastructure rehabilitation
Long-term loss control		Begin to assess long-term needs requiring large expenditure: customer meter replacement, water main replacement program, new customer billing system or Automatic Meter Reading (AMR) system.	Begin to assemble economic business case for long-term needs based upon improved data becoming available through the water audit process.	Conduct detailed planning, budgeting and launch of comprehensive improvements for metering, billing or infrastructure management	Continue incremental improvements in short-term and long-term loss control interventions
Target-setting			Establish long-term apparent and real loss reduction goals (+10 year horizon)	Establish mid-range (5 year horizon) apparent and real loss reduction goals	Evaluate and refine loss control goals on a yearly basis
Benchmarking			Preliminary Comparisons - can begin to rely upon the Infrastructure Leakage Index (ILI) for performance comparisons for real losses (see below table)	Performance Benchmarking - ILI is meaningful in comparing real loss standing	Identify Best Practices/ Best in class - the ILI is very reliable as a real loss performance indicator for best in class service

For validity scores of 50 or below, the shaded blocks should not be focus areas until better data validity is achieved.

Once data have been entered into the Reporting Worksheet, the performance indicators are automatically calculated. How does a water utility operator know how well his or her system is performing? The AWWA Water Loss Control Committee provided the following table to assist water utilities is gauging an approximate Infrastructure Leakage Index (ILI) that is appropriate for their water system and local conditions. The lower the amount of leakage and real losses that exist in the system, then the lower the ILI value will be.

Note: this table offers an approximate guideline for leakage reduction target-setting. The best means of setting such targets include performing an economic assessment of various loss control methods. However, this table is useful if such an assessment is not possible.

General Guidelines for Setting a Target ILI (without doing a full economic analysis of leakage control options)

Target ILI Range	Financial Considerations	Operational Considerations	Water Resources Considerations
1.0 - 3.0	Water resources are costly to develop or purchase; ability to increase revenues via water rates is greatly limited because of regulation or low ratepayer affordability.	Operating with system leakage above this level would require expansion of existing infrastructure and/or additional water resources to meet the demand.	Available resources are greatly limited and are very difficult and/or environmentally unsound to develop.
>3.0 -5.0	Water resources can be developed or purchased at reasonable expense; periodic water rate increases can be feasibly imposed and are tolerated by the customer population.	Existing water supply infrastructure capability is sufficient to meet long-term demand as long as reasonable leakage management controls are in place.	Water resources are believed to be sufficient to meet long-term needs, but demand management interventions (leakage management, water conservation) are included in the long-term
>5.0 - 8.0	Cost to purchase or obtain/treat water is low, as are rates charged to customers.	Superior reliability, capacity and integrity of the water supply infrastructure make it relatively immune to supply shortages.	Water resources are plentiful, reliable, and easily extracted.
Greater than 8.0	Although operational and financial considerations may allow a long-term ILI greater than 8.0, such a level of leakage is not an effective utilization of water as a resource. Setting a target level greater than 8.0 - other than as an incremental goal to a smaller long-term target - is discouraged.		
Less than 1.0	If the calculated Infrastructure Leakage Index (ILI) value for your system is 1.0 or less, two possibilities exist. a) you are maintaining your leakage at low levels in a class with the top worldwide performers in leakage control. b) A portion of your data may be flawed, causing your losses to be greatly understated. This is likely if you calculate a low ILI value but do not employ extensive leakage control practices in your operations. In such cases it is beneficial to validate the data by performing field measurements to confirm the accuracy of production and customer meters, or to identify any other potential sources of error in the data.		

Example 1a: Million Gallons: | **Example 1b**: Million Gallons: Performance Indicators | **Example 2a**: Megalitres: Reporting Worksheet | **Example 2b**: Megalitres: Reporting Worksheet

Example Audit 1a:

AWWA Free Water Audit Software: Reporting Worksheet

? Click to access definition
\+ Click to add a comment

Water Audit Report for: City of Asheville (01-11-010)
Reporting Year: 2013 (7/2012 - 6/2013)

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

WATER SUPPLIED

Volume from own sources:	7	7,352.880	MG/Yr	3		285.450	MG/Yr
Water imported:	n/a	0.000	MG/Yr				MG/Yr
Water exported:	n/a	0.000	MG/Yr				MG/Yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 7,067.430 MG/Yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:
Billed metered:	8	4,782.250	MG/Yr		
Billed unmetered:	n/a	0.000	MG/Yr		
Unbilled metered:	7	27.757	MG/Yr		
Unbilled unmetered:	8	157.790	MG/Yr		157.790 MG/Yr

Unbilled Unmetered volume entered is greater than the recommended default value

AUTHORIZED CONSUMPTION: 4,967.797 MG/Yr

Use buttons to select percentage of water supplied **OR** value

WATER LOSSES (Water Supplied - Authorized Consumption) 2,099.633 MG/Yr

Apparent Losses

				Pcnt:	Value:
Unauthorized consumption:		17.669	MG/Yr	0.25%	MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	7	111.220	MG/Yr	2.26%	MG/Yr
Systematic data handling errors:	5	11.956	MG/Yr	0.25%	MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 140.844 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 1,958.789 MG/Yr

WATER LOSSES: 2,099.633 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 2,285.180 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	4	1,236.5	miles
Number of active AND inactive service connections:	7	55,256	
Service connection density:		45	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: 4 145.3 psi

COST DATA

Total annual cost of operating water system:	10	$33,630,676	$/Year	
Customer retail unit cost (applied to Apparent Losses):	10	$3.22	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	6	$335.94	$/Million gallons	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 72 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Variable production cost (applied to Real Losses)
3: Unauthorized consumption

Example Audit 1b:

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

Water Audit Report for: City of Asheville (01-11-010)
Reporting Year: 2013 | 7/2012 - 6/2013

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 72 out of 100 ***

System Attributes:

	Apparent Losses:	140.844	MG/Yr
+	Real Losses:	1,958.789	MG/Yr
=	Water Losses:	2,099.633	MG/Yr
?	Unavoidable Annual Real Losses (UARL):	794.34	MG/Yr
	Annual cost of Apparent Losses:	$606,265	
	Annual cost of Real Losses:	$658,036	Valued at Variable Production Cost

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:

Non-revenue water as percent by volume of Water Supplied:	32.3%	
Non-revenue water as percent by cost of operating system:	3.9%	Real Losses valued at Variable Production Cost

Operational Efficiency:

Apparent Losses per service connection per day:	6.98	gallons/connection/day
Real Losses per service connection per day:	97.12	gallons/connection/day
Real Losses per length of main per day*:	N/A	
Real Losses per service connection per day per psi pressure:	0.67	gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL):	1,958.79	million gallons/year
? Infrastructure Leakage Index (ILI) [CARL/UARL]:	2.47	

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

Example Audit 2a:

AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: The City of Calgary
Reporting Year: 2013 (1/2013 - 12/2013)

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MEGALITRES (THOUSAND CUBIC METRES) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

<-------- Enter grading in column 'E' and 'J' --------> | Master Meter Error Adjustments

WATER SUPPLIED

				Pcnt:	Value:	
Volume from own sources:	7	174,324.000	ML/Yr	1.00%		ML/Yr
Water imported:	n/a	0.000	ML/Yr			ML/Yr
Water exported:	7	8,190.131	ML/Yr	1.00%		ML/Yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 164,488.979 ML/Yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	6	125,111.268	ML/Yr			
Billed unmetered:	8	3,503.386	ML/Yr			
Unbilled metered:	7	166.157	ML/Yr			
Unbilled unmetered:	6	1,444.000	ML/Yr		1,444.000	ML/Yr

Use buttons to select percentage of water supplied **OR** value

AUTHORIZED CONSUMPTION: 130,224.811 ML/Yr

WATER LOSSES (Water Supplied - Authorized Consumption)

34,264.168 ML/Yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		411.222	ML/Yr	0.25%		ML/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	6	1,265.429	ML/Yr	1.00%		ML/Yr
Systematic data handling errors:		312.778	ML/Yr	0.25%		ML/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 1,989.429 ML/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 32,274.739 ML/Yr

WATER LOSSES: 34,264.168 ML/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 35,874.325 ML/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	8	4,945.0	kilometers
Number of active AND inactive service connections:	8	312,075	
Service connection density:		63	conn./km main
Are customer meters typically located at the curbstop or property line?		No	
Average length of customer service line:	8	12.0	metres
Average operating pressure:	8	50.8	metres (head)

(length of service line, beyond the property boundary, that is the responsibility of the utility)

COST DATA

Total annual cost of operating water system:	9	$169,973,759	$/Year
Customer retail unit cost (applied to Apparent Losses):	9	$2.35	$/1000 litres
Variable production cost (applied to Real Losses):	9	$73.54	$/Megalitre

☑ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 72 out of 100 ***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Billed metered
3: Customer metering inaccuracies

Example Audit 2b:

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

WAS v5.0

Water Audit Report for: The City of Calgary
Reporting Year: 2013 | 1/2013 - 12/2013

*** YOUR WATER AUDIT DATA VALIDITY SCORE IS: 72 out of 100 ***

System Attributes:

	Apparent Losses:	1,989.429	ML/Yr
+	Real Losses:	32,274.739	ML/Yr
=	Water Losses:	34,264.168	ML/Yr
?	Unavoidable Annual Real Losses (UARL):	8,015.57	ML/Yr
	Annual cost of Apparent Losses:	$4,675,159	
	Annual cost of Real Losses:	$75,845,637	Valued at Customer Retail Unit Cost

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:	Non-revenue water as percent by volume of Water Supplied:	21.8%	
	Non-revenue water as percent by cost of operating system:	49.6%	Real Losses valued at Customer Retail Unit Cost
Operational Efficiency:	Apparent Losses per service connection per day:	17.47	litres/connection/day
	Real Losses per service connection per day:	283.34	litres/connection/day
	Real Losses per length of main per day*:	N/A	
	Real Losses per service connection per day per meter (head) pressure:	5.58	litres/connection/day/m
	From Above, Real Losses = Current Annual Real Losses (CARL):	32,274.74	ML/year
?	Infrastructure Leakage Index (ILI) [CARL/UARL]:	4.03	

* This performance indicator applies for systems with a low service connection density of less than 20 service connections/kilometre of pipeline

AWWA Free Water Audit Software: Acknowledgements

AWWA Water Audit Software Version 5.0 Developed by the Water Loss Control Committee of the American Water Works Association August, 2014

This software is intended to serve as a basic tool to compile a preliminary, or "top-down", water audit. It is recommended that users also refer to the current edition of the AWWA M36 Publication, Water Audits and Loss Control Programs, for detailed guidance on compiling a comprehensive, or "bottom-up", water audit using the same water audit methodology.

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REFERENCES:

- Alegre, H., Hirner, W., Baptista, J. and Parena, R. Performance Indicators for Water Supply Services. IWA Publishing 'Manual of Best Practice' Series, 2000. ISBN 1 900222 272

- Kunkel, G. et al, 2003. Water Loss Control Committee Report: Applying Worldwide Best Management Practices in Water Loss Control. Journal AWWA, 95:8:65

- AWWA Water Audits and Loss Control Programs, M36 Publication, 3rd Edition, 2009

- Service Connection Diagrams courtesy of Ronnie McKenzie, WRP Pty Ltd.

VERSION HISTORY:

Version:	Release Date:	Number of Worksheets:	Key Features and Developments
v1	2005/ 2006	5	The AWWA Water Audit Software was piloted in 2005 (v1.0 beta). The early versions (1.x) of the software restricted data entry to units of Million Gallons per year. For each entry into the audit, users identified whether the input was measured or estimated.
v2	2006	5	The most significant enhancement in v2 of the software was to allow the user to choose the volumetric units to be used in the audit, Million Gallons or Thousand Cubic Metres (megalitres) per year. Two financial performance indicators were added to provide feedback to the user on the cost of Real and Apparent losses.
v3	2007	7	In v3, the option to report volumetric units in acre-feet was added. Another new feature in v3 was the inclusion of default values for two water audit components (unbilled unmetered and unauthorized consumption). v3 also included two examples of completed audits in units of million gallons and Megalitres. Several checks were added into v3 to provide instant feedback to the user on common data entry problems, in order to help the user complete an accurate water audit.
v4 - v4.2	2010	10	v4 (and versions 4.x) of the software included a new approach to data grading. The simple "estimated" or "measured" approach was replaced with a more granular scale (typically 1-10) that reflected descriptions of utility practices and served to describe the confidence and accuracy of the input data. Each input value had a corresponding scale fully described in the Grading Matrix tab. The Grading Matrix also showed the actions required to move to a higher grading score. Grading descriptions were available on the Reporting Worksheet via a pop-up box next to each water audit input. A water audit data validity score is generated (max = 100) and priority areas for attention (to improve audit accuracy) are identified, once a user completes the requied data grading. A service connection diagram was also added to help users understand the impact of customer service line configurations on water losses and how this information should be entered into the water audit software. An acknoweldgements section was also added. Minor bug fixes resulted in the release of versions 4.1 and 4.2. A French language version was also made available for v4.2.
v5	2014	12	In v5, changes were made to the way Water Supplied information is entered into software, with each major component having a corresponding Master Meter Error Adjustment entry (and data grading requirement). This required changes to the data validity score calculation; v5 of the software uses a weighting system that is, in part, proportional to the volume of input components. The Grading Matrix was updated to reflect the new audit inputs and also to include clarifications and additions to the scale descriptions. The appearance of the software was updated in v5 to make the software more user-friendly and several new features were added to provide more feedback to the user. Notably, a dashboard tab has been added to provide more visual feedback on the water audit results and associated costs of Non-Revenue Water. A comments sheet was added to allow the user to track notes, comments and to cite sources used.

SB X7-7 Table 0: Units of Measure Used in UWMP* *(select one from the drop down list)*
Acre Feet
**The unit of measure must be consistent with Table 2-3*
NOTES:

SB X7-7 Table-1: Baseline Period Ranges			
Baseline	**Parameter**	**Value**	**Units**
10- to 15-year baseline 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	4.91%	Percent
	Number of years in baseline period	10	Years
	Year beginning baseline period range	1996	
	Year ending baseline period range	2005	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2004	
	Year ending baseline period range	2008	

SB X7-7 Table 2: Method for Population Estimates	
Method Used to Determine Population (may check more than one)	
☐	**1. Department of Finance** (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
☐	**2. Persons-per-Connection Method**
☑	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review
NOTES:	

SB X7-7 Table 3: Service Area Population		
Year		**Population**
10 to 15 Year Baseline Population		
Year 1	1996	57,174
Year 2	1997	57,460
Year 3	1998	57,747
Year 4	1999	58,033
Year 5	2000	58,320
Year 6	2001	58,458
Year 7	2002	58,597
Year 8	2003	58,735
Year 9	2004	58,874
Year 10	2005	59,012
Year 11		
Year 12		
Year 13		
Year 14		
Year 15		
5 Year Baseline Population		
Year 1	2004	58,874
Year 2	2005	59,012
Year 3	2006	59,150
Year 4	2007	59,289
Year 5	2008	59,427
2015 Compliance Year Population		
2015		59,331
NOTES: Calculated using the State's WUE data for the City of Lakewood.		

SB X7-7 Table 4: Annual Gross Water Use *								
Baseline Year *Fm SB X7-7 Table 3*		**Volume Into Distribution System** *This column will remain blank until SB X7-7 Table 4-A is completed.*	**Deductions**					**Annual Gross Water Use**
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water *This column will remain blank until SB X7-7 Table 4-B is completed.*	Water Delivered for Agricultural Use	Process Water *This column will remain blank until SB X7-7 Table 4-D is completed.*	
10 to 15 Year Baseline - Gross Water Use								
Year 1	1996	7,080	0		0	0	0	7,080
Year 2	1997	7,367	0		0	0	0	7,367
Year 3	1998	6,480	0		0	0	0	6,480
Year 4	1999	6,735	0		0	0	0	6,735
Year 5	2000	7,089	0		0	0	0	7,089
Year 6	2001	6,680	0		0	0	0	6,680
Year 7	2002	7,142	0		0	0	0	7,142
Year 8	2003	6,946	0		0	0	0	6,946
Year 9	2004	7,386	0		0	0	0	7,386
Year 10	2005	6,757	0		0	0	0	6,757
Year 11	0	0			0		0	0
Year 12	0	0			0		0	0
Year 13	0	0			0		0	0
Year 14	0	0			0		0	0
Year 15	0	0			0		0	0
10 - 15 year baseline average gross water use								**6,966**
5 Year Baseline - Gross Water Use								
Year 1	2004	6,735	0		0		0	6,735
Year 2	2005	7,089	0		0		0	7,089
Year 3	2006	6,680	0		0		0	6,680
Year 4	2007	7,142	0		0		0	7,142
Year 5	2008	6,946	0		0		0	6,946
5 year baseline average gross water use								**6,919**
2015 Compliance Year - Gross Water Use								
2015		6,582	1,117		0		0	6,582

* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Complete one table for each source.

Name of Source	*Groundwater*
This water source is:	
☑	The supplier's own water source
☐	A purchased or imported source

Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment* *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1996	7,080.11		7,080
Year 2	1997	7,367.01		7,367
Year 3	1998	6,480.33		6,480
Year 4	1999	6,735.24		6,735
Year 5	2000	7,089.11		7,089
Year 6	2001	6,680.26		6,680
Year 7	2002	7,142.09		7,142
Year 8	2003	6,946.16		6,946
Year 9	2004	7,386.00		7,386
Year 10	2005	6,757.23		6,757
Year 11	0			0
Year 12	0			0
Year 13	0			0
Year 14	0			0
Year 15	0			0
5 Year Baseline - Water into Distribution System				
Year 1	2004	6,735.24		6,735
Year 2	2005	7,089.11		7,089
Year 3	2006	6,680.26		6,680
Year 4	2007	7,142.09		7,142
Year 5	2008	6,946.16		6,946
2015 Compliance Year - Water into Distribution System				
2015		6,582		6,582

** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 4-C.1: Process Water Deduction Eligibility					
Criteria 1 Industrial water use is equal to or greater than 12% of gross water use					
Baseline Year *Fm SB X7-7 Table 3*		Gross Water Use Without Process Water Deduction	Industrial Water Use	Percent Industrial Water	**Eligible for Exclusion Y/N**
10 to 15 Year Baseline - Process Water Deduction Eligibility					
Year 1	1996	7,080		0.00%	NO
Year 2	1997	7,367		0.00%	NO
Year 3	1998	6,480		0.00%	NO
Year 4	1999	6,735		0.00%	NO
Year 5	2000	7,089		0.00%	NO
Year 6	2001	6,680		0.00%	NO
Year 7	2002	7,142		0.00%	NO
Year 8	2003	6,946		0.00%	NO
Year 9	2004	7,386		0.00%	NO
Year 10	2005	6,757		0.00%	NO
Year 11	0	0			NO
Year 12	0	0			NO
Year 13	0	0			NO
Year 14	0	0			NO
Year 15	0	0			NO
5 Year Baseline - Process Water Deduction Eligibility					
Year 1	2004	6,735		0.00%	NO
Year 2	2005	7,089		0.00%	NO
Year 3	2006	6,680		0.00%	NO
Year 4	2007	7,142		0.00%	NO
Year 5	2008	6,946		0.00%	NO
2015 Compliance Year - Process Water Deduction Eligiblity					
2015		5,465		0.00%	NO
NOTES:					

SB X7-7 Table 4-C.2: Process Water Deduction Eligibility					
Criteria 2 Industrial water use is equal to or greater than 15 GPCD					
Baseline Year *Fm SB X7-7 Table 3*		Industrial Water Use	Population	Industrial GPCD	**Eligible for Exclusion Y/N**
10 to 15 Year Baseline - Process Water Deduction Eligibility					
Year 1	1996		57,174	0	NO
Year 2	1997		57,460	0	NO
Year 3	1998		57,747	0	NO
Year 4	1999		58,033	0	NO
Year 5	2000		58,320	0	NO
Year 6	2001		58,458	0	NO
Year 7	2002		58,597	0	NO
Year 8	2003		58,735	0	NO
Year 9	2004		58,874	0	NO
Year 10	2005		59,012	0	NO
Year 11	0		0		NO
Year 12	0		0		NO
Year 13	0		0		NO
Year 14	0		0		NO
Year 15	0		0		NO
5 Year Baseline - Process Water Deduction Eligibility					
Year 1	2004		58,874	0	NO
Year 2	2005		59,012	0	NO
Year 3	2006		59,150	0	NO
Year 4	2007		59,289	0	NO
Year 5	2008		59,427	0	NO
2015 Compliance Year - Process Water Deduction Eligibility					
2015			59,331	0	NO
NOTES:					

SB X7-7 Table 4-C.3: Process Water Deduction Eligibility							
Criteria 3 Non-industrial use is equal to or less than 120 GPCD							
Baseline Year *Fm SB X7-7 Table 3*		Gross Water Use Without Process Water Deduction *Fm SB X7-7 Table 4*	Industrial Water Use	Non-industrial Water Use	Population *Fm SB X7-7 Table 3*	Non-Industrial GPCD	**Eligible for Exclusion Y/N**
10 to 15 Year Baseline - Process Water Deduction Eligibility							
Year 1	1996	7,080		7,080	57,174	111	YES
Year 2	1997	7,367		7,367	57,460	114	YES
Year 3	1998	6,480		6,480	57,747	100	YES
Year 4	1999	6,735		6,735	58,033	104	YES
Year 5	2000	7,089		7,089	58,320	109	YES
Year 6	2001	6,680		6,680	58,458	102	YES
Year 7	2002	7,142		7,142	58,597	109	YES
Year 8	2003	6,946		6,946	58,735	106	YES
Year 9	2004	7,386		7,386	58,874	112	YES
Year 10	2005	6,757		6,757	59,012	102	YES
Year 11	0	0		0	0		NO
Year 12	0	0		0	0		NO
Year 13	0	0		0	0		NO
Year 14	0	0		0	0		NO
Year 15	0	0		0	0		NO
5 Year Baseline - Process Water Deduction Eligibility							
Year 1	2004	6,735		6,735	58,874	102	YES
Year 2	2005	7,089		7,089	59,012	107	YES
Year 3	2006	6,680		6,680	59,150	101	YES
Year 4	2007	7,142		7,142	59,289	108	YES
Year 5	2008	6,946		6,946	59,427	104	YES
2015 Compliance Year - Process Water Deduction Eligiblity							
2015		5,465		5,465	59,331	82	YES
NOTES:							

SB X7-7 Table 4-C.4: Process Water Deduction Eligibility

Criteria 4
Disadvantaged Community
Use IRWM DAC Mapping tool http://www.water.ca.gov/irwm/grants/resources_dac.cfm

California Median Household Income		Service Area Median Household Income	Percentage of Statewide Average	**Eligible for Exclusion? Y/N**
2015 Compliance Year - Process Water Deduction Eligibility				
2010	$53,046	$79,113	149.14%	NO

A "Disadvantaged Community" is a community with a median household income less than 80 percent of the statewide average.

NOTES: Median household income (in 2014 dollars), 2010-2014 from US Census at http://www.census.gov/quickfacts/table/PST045215/0639892

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Annual Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1996	57,174	7,080	111
Year 2	1997	57,460	7,367	114
Year 3	1998	57,747	6,480	100
Year 4	1999	58,033	6,735	104
Year 5	2000	58,320	7,089	109
Year 6	2001	58,458	6,680	102
Year 7	2002	58,597	7,142	109
Year 8	2003	58,735	6,946	106
Year 9	2004	58,874	7,386	112
Year 10	2005	59,012	6,757	102
Year 11	0	0	0	
Year 12	0	0	0	
Year 13	0	0	0	
Year 14	0	0	0	
Year 15	0	0	0	
10-15 Year Average Baseline GPCD				**107**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2004	58,874	6,735	102
Year 2	2005	59,012	7,089	107
Year 3	2006	59,150	6,680	101
Year 4	2007	59,289	7,142	108
Year 5	2008	59,427	6,946	104
5 Year Average Baseline GPCD				**104**
2015 Compliance Year GPCD				
2015		59,331	6,582	99
NOTES:				

SB X7-7 Table 6: Gallons per Capita per Day *Summary From Table SB X7-7 Table 5*	
10-15 Year Baseline GPCD	107
5 Year Baseline GPCD	104
2015 Compliance Year GPCD	99
NOTES:	

SB X7-7 Table 7: 2020 Target Method *Select Only One*		
Target Method		Supporting Documentation
☑	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D *Contact DWR for these tables*
☐	Method 3	SB X7-7 Table 7-E
☐	Method 4	Method 4 Calculator
NOTES:		

SB X7-7 Table 7-A: Target Method 1 20% Reduction	
10-15 Year Baseline GPCD	2020 Target GPCD
107	85
NOTES:	

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target			
5 Year Baseline GPCD *From SB X7-7 Table 5*	Maximum 2020 Target[1]	Calculated 2020 Target[2]	Confirmed 2020 Target
104	99	99	99

*[1] *Maximum 2020 Target is 95% of the 5 Year Baseline GPCD*

[2] *2020 Target is calculated based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target.*

SB X7-7 Table 8: 2015 Interim Target GPCD		
Confirmed 2020 Target *Fm SB X7-7 Table 7-F*	10-15 year Baseline GPCD *Fm SB X7-7 Table 5*	2015 Interim Target GPCD
99	107	103

SB X7-7 Table 9: 2015 Compliance								
Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments *(in GPCD)* Enter "0" if No Adjustment: Extraordinary Events	Weather Normalization	Economic Adjustment	TOTAL Adjustments	Adjusted 2015 GPCD	Adjusted 2015 GPCD (Adjusted if applicable)	Did Supplier Achieve Targeted Reduction for 2015?
99	103	*From Methodology 8 (Optional)*	*From Methodology 8 (Optional)*	*From Methodology 8 (Optional)*	0	99	99.03812357	YES

Table 2-1: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
1910239	CITY OF LAKEWOOD	20,339	6,174
	TOTAL	20,339	6,174

Table 2-2: Plan Identification		
Select Only One	**Type of Plan**	
☑	**Individual UWMP**	
	☐	Water Supplier is also a member of a RUWMP
	☐	Water Supplier is also a member of a Regional Alliance

Table Agency Identification	
Type of Agency (select one or both)	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year (select one)	
☑	UWMP Tables Are in Calendar Years
☐	UWMP Tables Are in Fiscal Years
If Using Fiscal Years Provide Month and Date that the Fiscal Year Begins (mm/dd)	
Units of Measure Used in UWMP (select from Drop down)	
Unit	AF

Table 2-4: Water Supplier Information Exchange
The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
Wholesale Water Supplier Name *(Add additional rows as needed)*
CENTRAL BASIN MUNICIPAL WATER DISTRICT
CITY OF CERRITOS
LONG BEACH WATER
GOLDEN STATE WATER COMPANY
METROPOLITAN WATER DISTRICT
WATER REPLENISHMENT DISTRICT

Table 3-1: Population - Current and Projected					
	2015	2020	2025	2030	2035
Population Served	59,331	60,019	60,177	60,335	60,492

NOTES: 1. U.S. Bureau of Census, Census Data Tract: 1990, 2000, 2010 California Department of Finance Population Estimates: 1995, 2005, 2015. Southern California Area Governments 2016 Data: 2020, 2025, 2030, 2035

2 . Water Use Efficiency (WUE) Data Tool for the City of Lakewood.

Table 4-1: Demands for Potable and Raw Water - Actual		
Use Type	2015 Actual	
	Level of Treatment When Delivered	Volume
Single Family	Drinking Water	4,812
Multi-Family	Drinking Water	254
Commercial	Drinking Water	752
Institutional/Governmental	Drinking Water	78
Landscape	Drinking Water	278
Other	Drinking Water	0
	TOTAL	6,174

Table 4-2: Demands for Potable and Raw Water - Projected

Use Type *(Add additional rows as needed)*	Projected Water Use *Report To the Extent that Records are Available*			
	2020	2025	2030	2035
Single Family	5,197	5,301	5,407	5,515
Multi-Family	274	280	285	291
Commercial	812	828	845	862
Institutional/Governmental	84	86	88	90
Landscape	300	306	312	318
TOTAL	6,667	6,801	6,937	7,076

NOTES: Projected 2020 number includes an 8% increase in water use as compared to 2015 Actuals. The 8% encompasses an increase in water use over 2015 numbers considering the drought should end but people are more conscious of their water use and will still use less than was previously projected. This projection is still 25 percent LESS than our 2010 UWMP projected water use of 9,073 annual acre-feet based on 100 gallons-per-capita-per-day projected for 2020.

Table 4-3: Total Water Demands					
	2015	2020	2025	2030	2035
Potable and Raw Water *From Tables 4-1 and 4-2*	6,174	6,667	6,801	6,937	7,076
Recycled Water Demand* *From Table 6-4*	502	502	502	502	502
TOTAL WATER DEMAND	6,676	7,169	7,303	7,439	7,578

Table 4-4: 12-Month Water Loss Audit Reporting	
Reporting Period Start Date (01/2015)	Volume of Water Loss*
01/2015	327
** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.*	
NOTES: Using the American Water Works Association Method in calculating water loss from January 1, 2015 to December 31, 2015, the City has determined our water loss to be 327 acre-feet or 6% of total water pumped.	

Table 4-5: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook)	No
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc… utilized in demand projections are found.	
Are Lower Income Residential Demands Included In Projections?	No
NOTES: Future water savings are not projected for water use projections by sector because with our current tracking system this data is difficult to ascertain. However, an overall water use savings is calculated to account for outdoor irrigation saving as required and enforceable by the City's Emergency Water Conservation Ordinance.	

Table 5-1: Baselines and Targets Summary					
Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	1996	2005	107	103	99
5 Year	2004	2008	104		
*All values are in Gallons per Capita per Day (GPCD)					

Table 5-2: 2015 Compliance
Retail Agency or Regional Alliance Only

Actual 2015 GPCD*	2015 Interim Target GPCD*	Optional Adjustments to 2015 GPCD					2015 GPCD*	Did Supplier Achieve Targeted Reduction for 2015?
		Extraordinary Events*	Economic Adjustment*	Weather Normalization*	TOTAL Adjustments*	Adjusted 2015 GPCD*		
82	103	0	0	0	0	82	82	Yes

**All values are in Gallons per Capita per Day (GPCD)*

Table 6-1: Groundwater Volume Pumped						
☐	Supplier does not pump groundwater. The supplier will not complete the table below.					
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
Alluvial Basin	Central Groundwater Basin	7882	8129	8351	7906	6582
	TOTAL	7,882	8,129	8,351	7,906	6,582

Table 6-2: Wastewater Collected Within Lakewood Service Area in 2015						
☐	There is no wastewater collection system. The supplier will not complete the table below.					
	Percentage of 2015 service area covered by wastewater collection system *(optional)*					
	Percentage of 2015 service area population covered by wastewater collection system *(optional)*					
Wastewater Collection			**Recipient of Collected Wastewater**			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party?
SANITATION DISTRICTS OF LOS ANGELES COUNTY	Metered	27,343	SANITATION DISTRICTS OF LOS ANGELES COUNTY	Long Beach Water Reclamation Plant (LBWRP)	No	No
Total Wastewater Collected from Service Area in 2015:		27,343				

Table 6-3: Wastewater Treatment and Discharge Within Service Area in 2015										
☐	No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.									
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
Long Beach Water Reclamation Plant (LBWRP)	Los Coyotes Water Reclamation Plant	Coyote Creek downstream of Willow Street	NPDES No. 001	River or creek outfall	Yes	Tertiary	27,343	23,243	493	6,374
						Total	27,343	23,243	493	6,374

Table 6-4: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area

☐ Recycled water is not used and is not planned for use within the service area of the supplier.
The supplier will not complete the table below.

Name of Agency Producing (Treating) the Recycled Water:	CITY OF CERRITOS
Name of Agency Operating the Recycled Water Distribution System:	CITY OF LAKEWOOD
Supplemental Water Added in 2015	N/A
Source of 2015 Supplemental Water	N/A

Beneficial Use Type	General Description of 2015 Uses	Level of Treatment	2015	2020	2025	2030	2035
Agricultural irrigation							
Landscape irrigation (excludes golf courses)	Irrigation of Parks and Medians	Tertiary	502	502	502	502	502
Golf course irrigation							
Commercial use							
Industrial use							
Geothermal and other energy production							
Seawater intrusion barrier							
Recreational impoundment							
Wetlands or wildlife habitat							
Groundwater recharge (IPR)*							
Surface water augmentation (IPR)*							
Direct potable reuse							
Other *(Provide General Description)*							
		Total:	502	502	502	502	502

**IPR - Indirect Potable Reuse*

Table 6-5 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual			
☐	Recycled water was not used in 2010 nor projected for use in 2015. The supplier will not complete the table below.		
Use Type		**2010 Projection for 2015**	**2015 Actual Use**
Agricultural irrigation			
Landscape irrigation (excludes golf courses)		450	502
Golf course irrigation			
Commercial use			
Industrial use			
Geothermal and other energy production			
Seawater intrusion barrier			
Recreational impoundment			
Wetlands or wildlife habitat			
Groundwater recharge (IPR)			
Surface water augmentation (IPR)			
Direct potable reuse			
Other	*Type of Use*		
Total		450	502

Table 6-6: Methods to Expand Future Recycled Water Use			
☑	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
		Total	0

Table 6-7: Expected Future Water Supply Projects or Programs						
☑	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
☐	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other agencies?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Agency

Table 6-8: Water Supplies — Actual			
Water Supply	Additional Detail on Water Supply	2015	
		Actual Volume	Water Quality
Groundwater		9,432	Drinking Water
Recycled Water		502	Recycled Water
Total		9,934	

Table 6-9: Water Supplies — Projected									
Water Supply	Additional Detail on Water Supply	Projected Water Supply *Report To the Extent Practicable*							
		2020		2025		2030		2035	
		Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*
Groundwater		9,432		9,432		9,432		9,432	
Recycled Water		502		502		502		502	
Total		9,934	0	9,934	0	9,934	0	9,934	0

Table 7-1: Basis of Water Year Data			
Year Type	**Base Year** *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000*	**Available Supplies if Year Type Repeats**	
		☐ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____	
		☑ Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available	**% of Average Supply**
Average Year	2008	10998	100%
Single-Dry Year	1990	10847	99%
Multiple-Dry Years 1st Year	1989	10757	98%
Multiple-Dry Years 2nd Year	1990	10847	99%
Multiple-Dry Years 3rd Year	1991	10428	95%

Table 7-2 Normal Year Supply and Demand Comparison				
	2020	2025	2030	2035
Supply totals (*autofill from Table 6-9)*	9,934	9,934	9,934	9,934
Demand totals *(autofill from Table 4-3)*	7,169	7,303	7,439	7,578
Difference	2,765	2,631	2,495	2,356

Table 7-3: Single Dry Year Supply and Demand Comparison				
	2020	2025	2030	2035
Supply totals	9,432	9,432	9,432	9,432
Demand totals	6,667	6,801	6,937	7,076
Difference	2,765	2,631	2,495	2,356

Table 7-4: Multiple Dry Years Supply and Demand Comparison

		2020	2025	2030	2035
First year (2% less supply)	Supply totals	9,243	9,243	9,243	9,243
	Demand totals	6,667	6,801	6,937	7,076
	Difference	2,576	2,442	2,306	2,167
Second year (3% less supply)	Supply totals	9,149	9,149	9,149	9,149
	Demand totals	6,667	6,801	6,937	7,076
	Difference	2,482	2,348	2,212	2,073
Third year (8% less supply)	Supply totals	8,677	8,677	8,677	8,677
	Demand totals	6,667	6,801	6,937	7,076
	Difference	2,010	1,876	1,740	1,601

NOTES: Of the annual 9,432 acre-feet of supply, the First year indicates a 2% less supply; Second year calculates a 3% less supply; and Third year shows a 8% less supply. The Demand total calculation is taken from Table 7-3.

Table 8-1: Stages of Water Shortage Contingency Plan		
Stage	Complete Both	
	Percent Supply Reduction[1]	Water Supply Condition
Add additional rows as needed		
PHASE I	10%	Declaration of Drought by State or Regional Agency Calling for 10% Reduction
PHASE II	20%	Declaration of Drought by State or Regional Agency Calling for 20% Reduction
PHASE III	30%	Declaration of Drought by State or Regional Agency Calling for 30% Reduction
PHASE IV	40%	Halt of artificial recharge of groundwater basin over 3 year period
PHASE V	50%	Halt of artificial recharge of groundwater basin over 5 year period

[1] *One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.*

Table 8-2: Restrictions and Prohibitions on End Uses		
Stage	Restrictions and Prohibitions on End Users	Penalty, Charge, or Other Enforcement?
PHASE II	Landscape - Restrict or prohibit runoff from landscape irrigation	Yes
PHASE III	Landscape - Limit landscape irrigation to specific times	Yes

Table 8-3: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods	
Stage	Consumption Reduction Methods by Water Supplier
PHASE II	Provide Rebates for Landscape Irrigation Efficiency
PHASE III	Decrease Line Flushing

Table 8-4: Minimum Supply Next Three Years			
	2016	2017	2018
Available Water Supply	9,432	9,432	9,432

Table 10-1: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
CITY OF CERRITOS	☑	☑
CITY OF LONG BEACH	☑	☑
	☐	☐
County Name	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
Los Angeles County	☑	☑