



City of Lakewood 2020 Urban Water Management Plan



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RESOLUTION NO. 2021-34

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF
LAKEWOOD ADOPTING THE CITY OF LAKEWOOD 2020
URBAN WATER MANAGEMENT PLAN UPDATE

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 2020 Urban Water Management Plan Update must be adopted before July 1, 2021 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 2020 Urban Water Management Plan Update, was reviewed by the Water Resources Committee on April 22, 2021 and June 15, 2021 Meetings; 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, 2021;


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 2020 Urban Water Management Plan Update, has been submitted to a public review and a public hearing before the City Council.

SECTION 2. The 2020 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.

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ADOPTED AND APPROVED THIS 22ND DAY OF JUNE, 2021.

Mayor 

ATTEST:


City Clerk 

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- Appendix 2. 2015 SB X7-7 Tables (Verification Form)
- Appendix 3. 2020 Required UWMP Tables
- Appendix 4. 2020 Required Energy Tables
- Appendix 5. 2020 AWWA Water Audit
- Appendix 6. 2019 AWWA Water Audit
- Appendix 7. 2018 AWWA Water Audit
- Appendix 8. 2017 AWWA Water Audit
- Appendix 9. 2016 AWWA Water Audit
- Appendix 10. 2020 Completed Urban Water Management Plan Checklist



ATTACHMENTS

- Attachment 1. Sample Water Conservation Device and Turf Rebate Applications
- Attachment 2. 3rd Central Basin Adjudication Amendment (2013)
- Attachment 3. Excerpt from the Lakewood Water Resources Departmental Emergency Operations Procedures Public Notification Plan
- Attachment 4. Lakewood Municipal Code (Section 7500-7513)
- Attachment 5. Residential Water Audit Checklist
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- Attachment 7. Recycled Water System Expansion Study
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- Attachment 10. Sample Lakewood Connect E-magazine
- Attachment 11. Water Waster Door Hanger
- Attachment 12. Water Conservation Brochure
- Attachment 13. Proof of Notification & Distribution of 2020 City of Lakewood Urban Water Management Plan Update
- Attachment 14. Lakewood 2018 Hazard Mitigation Plan
- Attachment 15. MWD Annual Progress Report 2019
- Attachment 16. Gateway Water Management Authority 2020 Regional Alliance Target Compliance Report



CONTACT SHEET

Plan Submittal Date: June 30, 2021

Name of Person Submitting Plan: Jeff Wood, Mayor

Phone Number: 562.866.9771 ext. 2700

Water Supplier Type: Municipality

Water Sales Type: Retailer

Lakewood Water System Number: CA1910239

Utility services provided by water utility: Potable & Recycled Water

Bureau of Reclamation Contractor: No

State Water Project Contractor: No

Preparer(s): Michael C. Aguirre
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Chapter 1: Introduction and Overview

1.1 Introduction

The 2020 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 target of 99 GPCD required by state mandate;
- 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 8,467 acre-feet from 2016 to 2020, which includes both Lakewood potable water as well as water exported to other agencies. Annual water use varies based on weather conditions and implementation of conservation regulations. Since the 2015 UWMP, average water use has increased 9 percent as a dual result of water conservation regulation restrictions being lifted and the effect of the COVID-19 “stay-at-home” orders in 2020. 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 2020 Plan serves to update the City of Lakewood's 2015 UWMP.

1.2 New Requirements for 2020 Update

Per the California Water Code (Water Code), the following new requirements have been identified in the 2020 Urban Water Management Plan Guidebook for Urban Water Suppliers and have been addressed throughout this report:

- Five Consecutive Dry-Year Water Reliability Assessment
- Drought Risk Assessment
- Seismic Risk
- Energy Use Information
- Water Loss Reporting for Five Years
- Water Shortage Contingency Plan
- Groundwater Supplies Coordination
- Lay Description

Table 1-1: Water Code Changes Since 2015 UWMP

Change Number	Topic	CWC Section	Summary	Guidebook Section
1	System Description	10631(a)	Suppliers shall coordinate with local or regional land use authorities to determine the most appropriate land uses information for projecting water use in five-year increments, up to the year 2045.	3.0
2	Other Social, Economic, and Demographic Factors	10631	Describe the service area of the supplier, including current and projected population, climate, and other social, economic, and demographic factors affecting the supplier’s water management planning.	3.4.2
3	Land Uses within Service Area	10631(a)	The description shall include the current and projected land uses within the existing or anticipated service area affecting the supplier’s water management planning.	3.5
4	Distribution System Water Loss	10631(d)(3) (A) & (C)	Suppliers shall provide quantified distribution system losses for each of the five preceding years and whether or not the state standard was met	4.2.4
5	Projected Water Use	10635	Suppliers shall provide a simple lay description of their projected water use for the foreseeable future.	4.2.6
6	Characteristic Five-Year Water Use	10635(b)	Consideration of climate changes in future projections in regards to water supply.	4.2.7
7	Climate Change Effects	10635 (b)(1)	Consideration of climate changes in future projections in regards to water supply.	6.2 & 10.1
8	Drought Risk Assessment	10635(b)	Drought Risk Assessment prepared as a component of the 2020 UWMP.	7.3
9	Water Service Reliability-Five Consecutive Dry Years	10635 (b)(1)	Submittal Table 7.4 is used for the Supplier’s water service reliability assessment for five consecutive dry years, for each of the five-year projection increments out to at least 2040.	7.2.1 & 7.2.3.3
10	Water Supply Reliability Analysis	10632 (a)(1)	Key attributes of its water supply reliability analysis.	8.1
11	Six Standard water Shortage Levels	10632 (a)(3)(A)	Six standard water shortage levels corresponding to progressive ranges of up to 10-, 20-, 30-, 40-, and 50-percent shortages and greater than 50-percent shortage.	8.3
12	Shortage Response actions	10632 (a)(4)	Locally appropriate “shortage response actions” for each shortage level, with a corresponding estimate of the extent the action will address the gap between supplies and demand.	8.4
13	Annual Water Supply and Demand Assessment Procedures	10632 (a)(2)	Suppliers are required to submit, by July 1 of each year, beginning in the year following the adoption of the 2020 UWMP, an annual water shortage assessment report to the California Department of Water Resources (DWR).	8.2
14	Communication Protocols	10632 (a)(5)	Communication protocols and procedures to inform customers, the public, and government entities of any current or predicted water shortages and associated response actions.	8.5
15	Monitoring and Reporting	10632 (a)(9)	Monitoring and reporting procedures to assure appropriate data is collected to monitor customer compliance and to respond to any state reporting requirements.	8.9
16	WSCP Refinement Procedures	10632 (a)(10)	A reevaluation and improvement process to assess the functionality of its WSCP and to make appropriate adjustments as may be warranted.	8.10

Chapter 2: Plan Preparation

2.1 Basis for Preparing a Plan

This UWMP was prepared in compliance with the California Urban Water Management Planning Act and in conformance with the Department of Water Resources' Urban Water Management Plan for 2020.

2.2 Public Water Systems

The City of Lakewood is a public urban water supplier serving more than 3,000 customers. The City serves a single public water system and service area. Table 2-1 provides a summary of the number of connections and total volume of water supplied by the City to its customers for calendar year 2020.

Table 2-1: Public Water Systems

Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020 (acre-feet)
CA1910239	City of Lakewood	20,193	7,034
TOTAL		20,193	7,034

2.3 Regional Planning

The City has developed its 2020 reporting solely on its service area to address all requirements of the California Water Code. The City's 2020 UWMP was not developed as a Regional Plan.

2.4 Individual or Regional Planning and Compliance

The City has developed an UWMP that reports solely on its service area and will not be participating in a regional UWMP update. This plan addresses all requirements of the Water Code including water use targets and baselines for SB X7-7 Water Conservation Act of 2009 reporting.

2.5 Regional Alliance

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.

The City has developed an UWMP that reports solely on its service area. The individual UWMP addresses all requirements of the CWC and the City has prepared an individual UWMP for the 2020 update as identified in Table 2-2.

Table 2-2: Plan Identification

Select Only One	Type of Plan		Name of RUWMP or Regional Alliance
<input checked="" type="checkbox"/>	Individual UWMP		
	<input type="checkbox"/>	Water Supplier is also a member of a RUWMP	
	<input checked="" type="checkbox"/>	Water Supplier is also a member of a Regional Alliance	Gateway Regional Alliance
<input type="checkbox"/>	Regional Urban Water Management Plan (RUWMP)		

2.6 Fiscal or Calendar Year and Units of Measure

The City has reported water-related information included in this UWMP based on calendar year basis and all units are measures in acre-feet (AF) as identified in Table 2-3.

Table 2-3: Supplier Identification

Type of Supplier	
<input type="checkbox"/>	Supplier is a wholesaler
<input checked="" type="checkbox"/>	Supplier is a retailer
Fiscal or Calendar Year	
<input checked="" type="checkbox"/>	UWMP Tables are in Calendar Years
<input type="checkbox"/>	UWMP Tables Are in Fiscal Years
Units of Measure Used in UWMP	
Unit	AF (acre-feet)

2.7 Coordination and Outreach

2.7.1 Wholesale and Retail Coordination

The City of Lakewood relies on groundwater pumped from the adjudicated Central Groundwater Basin. The City is a member agency of Central Basin Municipal Water District (CBMWD), a wholesale water agency. As mentioned in Table 2-4, the City has provided its 2020 UWMP to CBMWD, which includes water use projections in five-year increments for normal, single dry, and multiple dry year conditions over the next 20 years.

Table 2-4: Water Supplier Information Exchange

The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with Water Code section 10631.
CENTRAL BASIN MUNICIPAL WATER DISTRICT

2.7.2 Coordination with Other Agencies and the Community

The City’s Department of Water Resources prepared the 2020 Urban Water Management Plan during April 2021. 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 2020 UWMP: Metropolitan Water District of Southern California (MWD), Central Basin Municipal Water District (CBMWD), City of Cerritos, City of Long Beach, Los Angeles County Sanitation District, Golden State Water Company (GSWC), and the Water Replenishment District of Southern California (WRD). As discussed in Section 10.2, the City notified these agencies, as well as the cities and county within which the City provides water supplies, at least sixty (60) days prior to the public hearing of the preparation of the 2020 UWMP and invited them to participate in the development of the UWMP (Attachment 13).

Table 2-5 summarizes the coordination conducted by the City in preparation for the UWMP.

Table 2-5: 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, Golden State Water Company	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 <i>Lakewood Briefs</i> , <i>Lakewood Community News</i> , <i>Lakewood Connect eMagazine</i> , Available at 2 City Locations & 2 Los Angeles County Libraries	Draft UWMP online at www.lakewoodcity.org , City of Lakewood, Notice in <i>Lakewood Briefs</i> , <i>Lakewood Community News</i> , <i>Lakewood Connect eMagazine</i> ,

2.7.3 Notice to Cities and Counties

The City of Lakewood has notified the Metropolitan Water District of Southern California (MWD), Central Basin Municipal Water District (CBMWD), City of Cerritos, City of Long Beach, Los Angeles County Sanitation District, Golden State Water Company (GSWC), and the Water Replenishment District of Southern California (WRD) of the initial preparation effort and public hearing for the public draft (notification has been reported in Chapter 10 Table 10-1). A copy of the notification letters sent to these agencies is included in Attachment 13.

2.8 Public Participation

The Department of Water Resources staff met with the City Council Water Resources Committee on April 22, 2021 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 2020 Urban Water Management Plan Update at the June 22, 2021 City Council meeting 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.
- Published draft Urban Water Management Plan on the City of Lakewood’s website: www.lakewoodcity.org.

2.9 Adoption and Submittal

On April 27, 2021 the Lakewood City Council opened the public comment period for the UWMP. The Lakewood City Council held a public hearing and adopted Resolution No. 2021-34, approving the amended plan on June 22, 2021.

The following outlines the schedule for public review, adoption and submittal of the 2020 Urban Water Management Plan:

Table 2-6: Adoption & Submittal Schedule

Action	Time Line
Informed Outside Agencies Regarding the Preparation of the UWMP	April 15, 2021
Presentation of the UWMP to the City Council Water Resources Committee	April 22, 2021
City Council Opens Public Comment Period	April 27, 2021
UWMP Available for Public Comment in the City Clerk’s Office, Mayfair Park, Nye and Iacoboni Libraries	April 28, 2021
UWMP Draft Available Online at www.lakewoodcity.org	April 28, 2021
Notification to Community of Public Comment Period	April 28, 2021
Deadline for Written Comments	June 21, 2021
City Council Holds Public Hearing to Accept Public Comments and Adopt UWMP	June 22, 2021
Submittal to the State of California Department of Water Resources, State Library	June 30, 2021
Adopted 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, 2021

Chapter 3: System Description

3.1 Description of Lakewood

The City of Lakewood was 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.

3.2 Water Purveyors

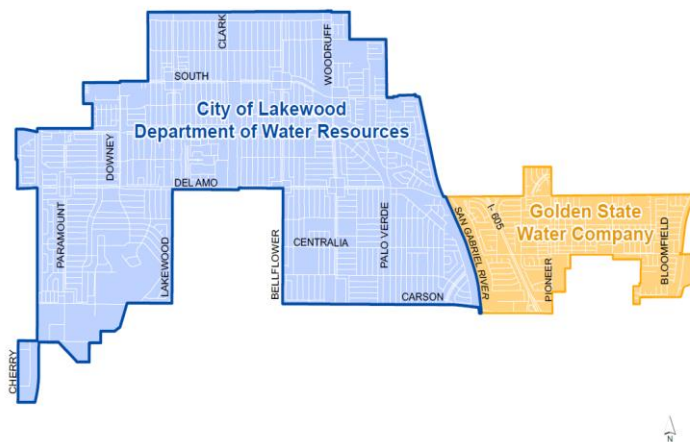
Two water purveyors serve Lakewood. The City of Lakewood supplies water to Lakewood residents and businesses west of the San Gabriel River. The Department of Water Resources operates as a municipal water utility that relies solely on water revenues from potable water sales, recycled water sales and other 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 customer accounts in the city of Lakewood.

Figure 3-1



Figure 3-2

Water Purveyors in Lakewood



Lakewood maintains approximately 180 miles of water mains, ten 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 four emergency interconnections with GSWC, the City of Cerritos, the City of Long Beach, and the city of Signal Hill. 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.

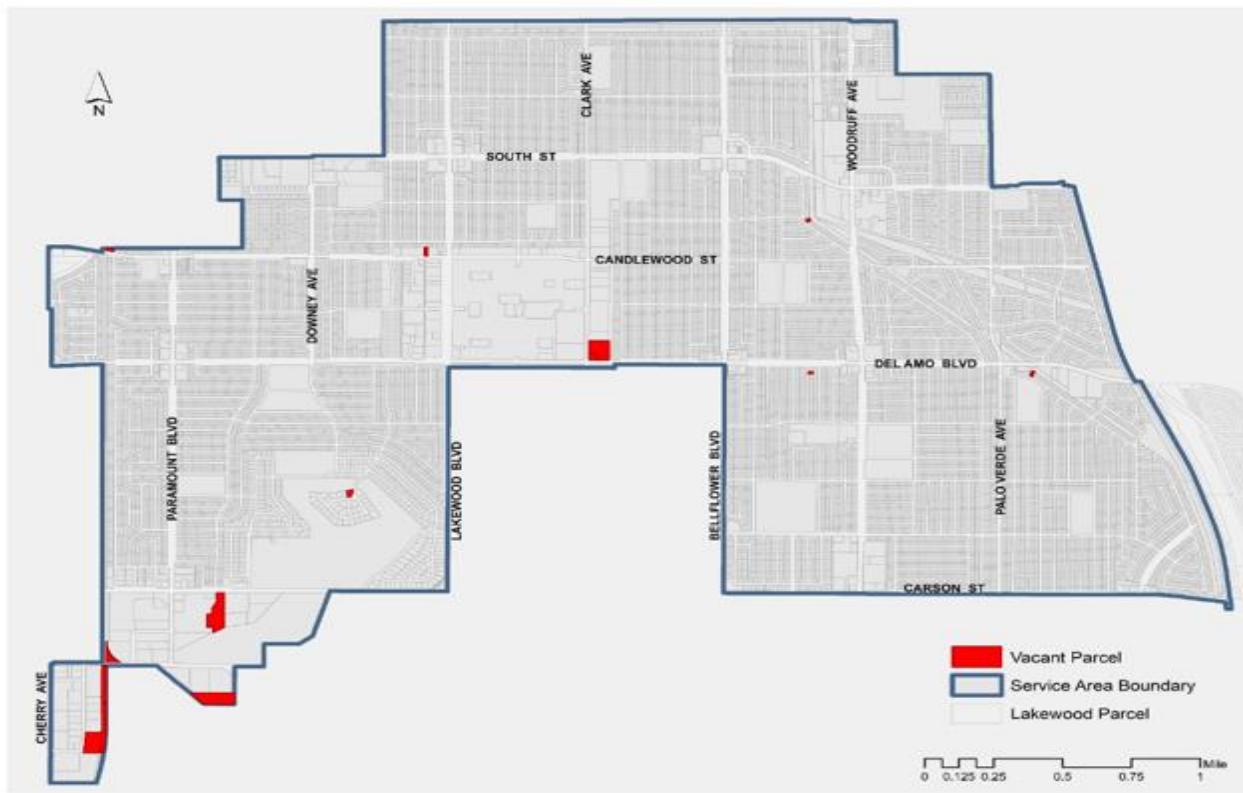
3.3 Land Use

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 built commercial centers at most major intersections for easy access by foot to grocery stores and other necessities. The anchors at Lakewood Center Mall include two department stores: Macy’s 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.

Figure 3-3
City of Lakewood Water Department
Vacant Parcels
April 2021



Approximately 22 acres of land remains vacant in the Lakewood Department of Water Resources service area: 4.3 acres zoned commercial, 17.2 acres zoned manufacturing, and 0.9 acres zoned residential. The table below indicates the city’s distribution of land use. The largest vacant parcel is over 4.7 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 April 2021”.

Table 3-1: 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 20,193 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 2013¹, 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 parcels². 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 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.

3.4 Service Area Climate

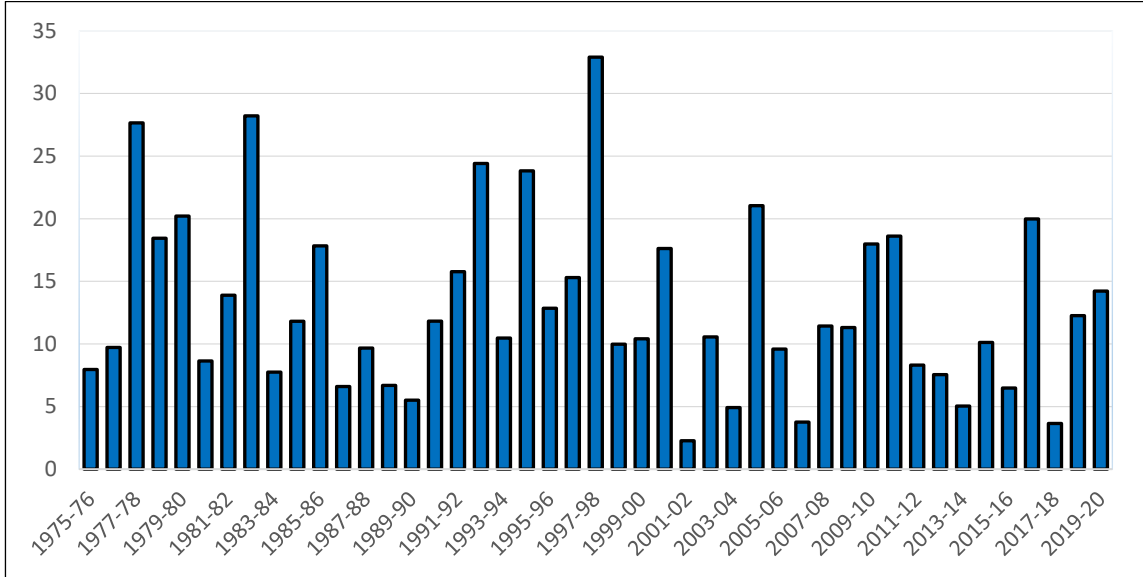
Lakewood lies close enough to the ocean to benefit from sea breezes and marine cloud layer. The temperature averages 84°F in the summer months and 66°F in the winter months. Rainfall averages 12-14 inches annually. Rainfall for the 2019/20 water year totaled 14.22 inches. The cyclical nature of the region’s rainfall plays a significant role in water supply demand. Water demand drops in those years with above average rainfall.

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

Figure 3-4 indicates the historical rainfall for the city.

Figure 3-4: Lakewood’s Annual Rainfall (inches) 1975 to 2020



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 2020.

Table 3-2: 2020 Lakewood’s Average Monthly ETo, Rainfall and Temperature

Month	Monthly (in) ETo ³	Monthly Rainfall (Inches)	Monthly Average Temperature (Fahrenheit)	
			Low	High
January	1.99	0.26	41.3	67.3
February	2.94	0.46	42.4	69.0
March	3.34	2.88	47.5	65.6
April	4.06	2.72	52.1	69.2
May	5.96	0.03	55.0	76.4
June	5.26	0.04	59.1	77.4
July	6.62	0.00	61.4	83.6
August	6.31	0.01	64.6	87.7
September	4.66	0.05	59.7	86.4
October	3.51	0.12	56.8	80.7
November	2.44	0.23	44.9	73.5
December	2.22	1.35	39.9	71.5
Annual	49.31	8.15	52.1	75.7

3.5 Service Area 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. As of the date of this plan, the 2020 Census is not complete, but preliminary population estimates show a decrease of 0.2 percent between the 2010 and 2020 U.S. 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.

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

The City of Lakewood Department of Water Resources serves approximately 73 percent of the city of Lakewood’s population, located west of the San Gabriel River. The 2000 and 2010 population for the utility’s service area listed in Table 3-2 is based on census tract data and the 2020 population is based on Southern California Area Governments (SCAG) estimates for the City of Lakewood (as the population from the 2020 Census has not been finalized).

The 2025, 2030, 2035, and 2040 population projections are also based on Southern California Area Governments (SCAG) estimates for the City of Lakewood⁴. 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 an estimated population of 79,919 for the City of Lakewood for 2020. To consolidate the difference in these two modeling tools, and taking into account that the 2020 Census population totals have not yet been finalized, the State Department of Water Resources Water Use Efficiency (WUE) Data tool was used to more accurately depict the projected population growth by overlaying 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 3-3: Population Current and Projected

Population Served	2020	2025	2030	2035	2040
	59,465	60,224	60,664	61,104	62,131

NOTES: ¹U.S. Bureau of Census, Census Data Tract: 2000, 2010, 2020
 California Department of Finance Population Estimates: 2005, 2015, 2020
 Southern California Area Governments 2021 Data: 2025, 2030, 2035, 2040
²Water Use Efficiency (WUE) Data Tool for the City of Lakewood.

3.6 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.

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

Table 3-4: Water Quality—Current and Projected Water Supply Impacts (acre-feet)

Water Source	Description of Condition	2020	2025	2030	2035	2040
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 existing treatment system at Well #27, Lakewood has begun implementation of a similar treatment system at Well 13A to ensure water quality. 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.

Chapter 4: System Water Use Current and Projected

4.1 Non-Potable versus Potable Water Use

Recycled water is addressed comprehensively in Section 6.3. However, a summary of recycled water demand is included in Table 4-6.

4.2 Past Water Use by Sector

4.2.1 Actual Water Demand 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 20,151 active, billable accounts, a decrease of 48 customers since 2015. Meter audit reports conducted in 2018, in conjunction with the City’s transition to a full AMI meter reading system, resulted in the identification of many obsolete service connections and accounts, as well as the expansion of meter classes to more accurately depict the Lakewood system. As noted, all water delivered to Lakewood water customers is metered and billed on a bi-monthly basis with the exception of the 42 recycled meter accounts which are billed on a monthly basis.

The predominantly residential character of Lakewood coupled with the retail base that exists in the community creates a stable environment for water demand. With that said, the tangible effect of the COVID-19 “stay-at-home” orders throughout 2020 have significantly increased our residential water consumption and only slightly affected our commercial use. The Department of Water Resources anticipates little fluctuation in the type and number of water accounts but annual water usage can vary over the planning period depending on factors such as weather, conservation regulations, and any other special cases such as the COVID-19 stay-at-home restrictions experienced in 2020.

Table 4-1: Water Deliveries- Actual 2010

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

On the heels 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) water use 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 water usage much lower than was anticipated in the 2010 UWMP projections for 2015.

Table 4-2: Water Deliveries- Actual 2015

Water Use Sector	Metered		Total
	# of Accounts	Volume (af)	Volume (af)
Single-Family	19,094	4,812	4,812
Multi-Family	201	254	254
Commercial	601	752	752
Institutional/Governmental	84	78	78
Landscape (no recycled)	219	278	278
Other			
TOTAL	20,199	6,174	6,174

4.3 Current Water Use by Sector

4.3.1 Actual Water Demand 2020

As the state of California surpassed water savings of 20 percent in 2017, in April 2017, Governor Brown lifted the drought emergency declaration. Concurrently, the City of Lakewood City Council lifted the water use restrictions. With the easing of restrictions, Lakewood residents inevitably began to use more water, yet the percentage increase was 2.4 percent in both 2017 and 2018, with a marked decrease in water consumption of 6 percent in 2019. Before the COVID-19 pandemic struck the world in early 2020, the City of Lakewood had already met the state-mandated GPCD goal for 2020 with a 98 GPCD in 2019. COVID-19 “stay-at-home” orders inevitably affected Lakewood’s water consumption for 2020 with an increase in residential water usage and the subsequent decrease in commercial water usage. Final water usages for 2020 indicate a total increase in water usage of 3.9 percent from 2019 and an overall increase of 9.4 percent from the 2015 totals listed in the 2015 UWMP.

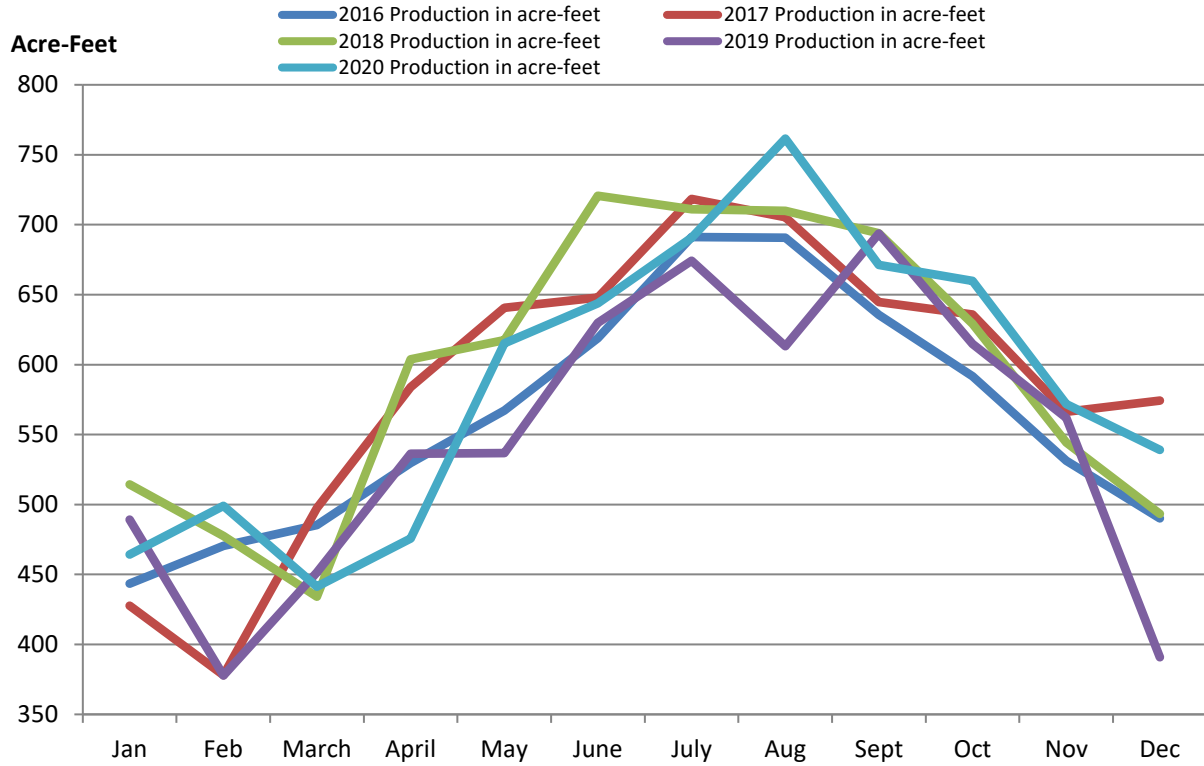
Table 4-3 below lists the actual 2020 water use data by water sectors listed in the California Water Code (CWC).

Table 4-3: Demands for Potable Water – Actual

Use Type	2020 Actual		
	# of Metered Accounts	Level of Treatment When Delivered	Volume (acre-feet)
Single-Family	18,927	Drinking Water	5,405
Multi-Family	199	Drinking Water	256
Commercial	598	Drinking Water	695
Institutional/ Governmental	70	Drinking Water	81
Landscape	212	Drinking Water	317
Fire Meter	145	Drinking Water	2
Distribution System Water Loss		Drinking Water	
TOTAL	20,151		6,756
NOTES: Landscape does not include recycled water deliveries of 421 acre-feet via 42 metered accounts.			

Figure 4-1 illustrates water production in acre-feet for 2016 through 2020. As shown in the figure, water production in 2020 has increased roughly 9.4% since 2015. Conservation efforts on the part of Lakewood residents have been thwarted due to the COVID-19 “stay-at-home” restrictions, which have largely been in place since March 2020 and have increased residential consumption accordingly. Figure 4-1 includes water produced solely for Lakewood customers and does not include any water delivered to the City of Long Beach as part of the Lakewood/Long Beach Water Purchase Agreement.

Figure 4-1: 5-Year Lakewood Water Production



4.4 Projected Water Use by Sector

4.4.1 Projected Water Demand 2025, 2030, 2035, and 2040

The projected deliveries for 2025 and beyond are calculated using the “new normal” of water use. Since the drought emergency ordinance in California was lifted in 2017, Lakewood has seen a slow increase in potable water use, with the biggest increase being realized in 2020. The cumulative effects of a 9 percent increase in residential potable water use and a 21 percent decrease in commercial potable water use resulted in the City of Lakewood falling short of the calculated baseline goal of 99 GPCD by 2020. It is important to note that in 2019, Lakewood residents were on track in meeting the state-mandated goal with overall water usage down almost 5 percent. The special circumstances experienced in 2020 due to the COVID-19 pandemic have caused city-wide water usage to rise, resulting in Lakewood not meeting their target goal for 2020. With possible drought conditions, the State may implement emergency water shortage restrictions again and Lakewood will implement the same restrictions. The calculations below take 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. In order to meet the state-mandated 99 GPCD goal, Lakewood water use is projected with a modest 1% decrease every 5 years of the plan in order to meet the state-mandated GPCD goal.

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

Year	2020 Actual	2025 PROJECTED	2030 PROJECTED	2035 PROJECTED	2040 PROJECTED
Population ¹	59,465	60,224	60,664	61,104	62,131
Acre-feet of Lakewood system used ²	6,756	6,688	6,621	6,555	6,489
Convert Lakewood system use acre-feet to gallons	2,201,449,356	2,179,291,488	2,157,459,471	2,135,953,305	2,114,417,139
gallons per day	6,031,368	5,970,662	5,910,848	5,851,927	5,793,006
gallons-per-capita-per-day (GPCD)	101	99	97	96	93

Table 4-5 below describes in detail and by sector projected water use taking into account an increase in population projections and a modest decrease of 1% every 5 years over the next 20 years of the plan. Year 2020 Actual water use shows a 1.3 percent increase from the 2015 UWMP 2020 projected water use. Year 2020 predictions for water use were initially projected with an 8 to 10% increase in the 2015 UWMP. 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. Actual data shows that the “new normal” increase was closer to 2 percent over the past five years since the 2015 UWMP. Along with possible internal restrictions and water-use practices, the City of Lakewood will strive to both educate and encourage Lakewood residents to make slight changes in their water usage to ensure that collectively we are impacting the amount of city-wide water consumption and together meeting the state-mandated water-use goals for the City.

Table 4-5: Use for Potable and Non-Potable Water – Projected

Use Type	Additional Description	Projected Water Use in acre-feet			
		2025	2030	2035	2040
Single-Family		5,351	5,297	5,244	5,191
Multi-Family		253	251	248	246
Commercial		688	681	674	668
Institutional/ Governmental		80	79	79	78
Landscape		314	311	308	304
Other	Fire Meters	2	2	2	2
TOTAL		6,688	6,621	6,555	6,489

Table 4-6: Total Water Use (Potable and Non-Potable)

	2020	2025	2030	2035	2040
Potable Water Demand (Table 4-1)	6,756	6,688	6,621	6,555	6,489
Recycled Water Demand (Table 6-4)	446	450	450	450	450
Optional Deduction of Recycled Water Put Into Long-Term Storage	0	0	0	0	0
TOTAL WATER USE	7,202	7,138	7,071	7,005	6,939

4.5 Distribution System Water Losses

The City of Lakewood Department of Water Resources runs an accountable and efficient water distribution system. The City has meters at all of our wells and AMI meters at 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. 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, 2020 to December 31, 2020, the City has determined our water loss to be 248 acre-feet or about 3.1% of total water produced. See Appendices 4-8 for a detailed analysis of the last five years of water loss audit reports.

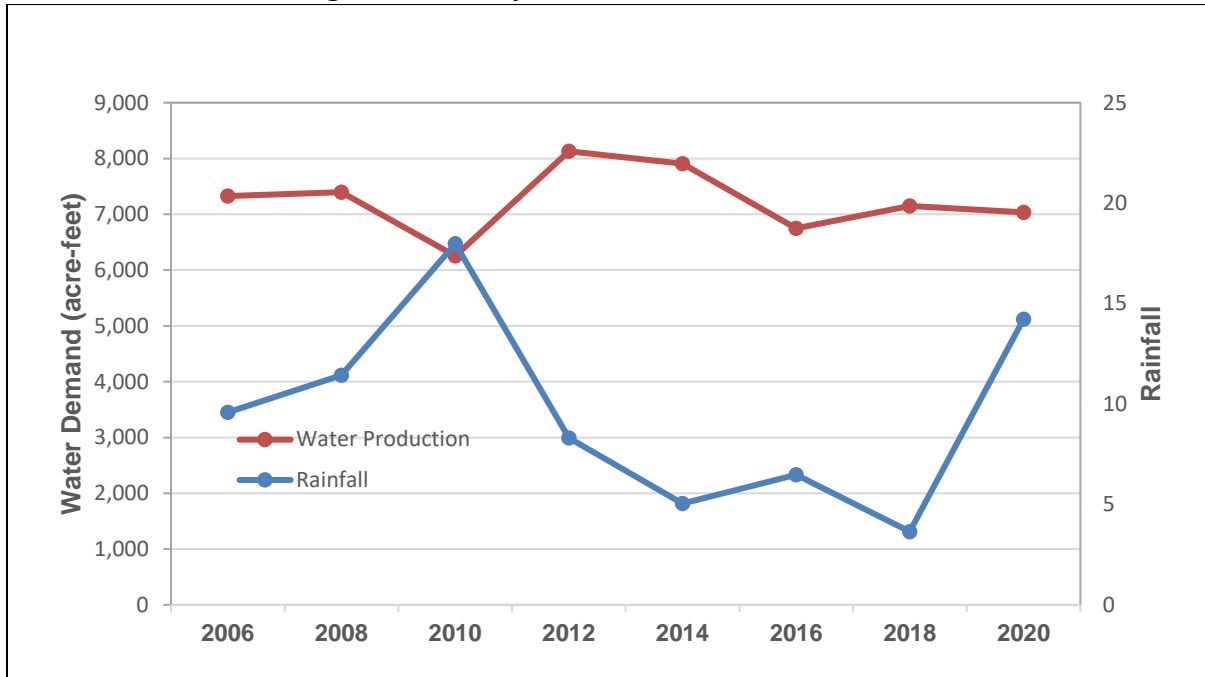
Table 4-7: Last Five Years of Water Loss Audit Reporting

Reporting Period Start Date	Volume of Water Loss (acre-feet)
01/2016	348
01/2017	394
01/2018	278
01/2019	138
01/2020	248

4.6 Estimating Future Water Savings

Since Lakewood is primarily a residential community and the major portion of residential water use is outside the home for landscape irrigation, the Lakewood Department of Water Resources will target this type of water use to ensure that the per capita water use target goal can be met. As Figure 4-2 illustrates, outdoor irrigation naturally declines as rainfall increases.

Figure 4-2: Comparison Water Demand & Rainfall



4.6.1 Reducing Residential Demand

The Lakewood Department of Water Resources water consumption is divided into the following service types: 80% single-family residential, 10% commercial, 4% multi-family, 5% landscape irrigation, and 1% institutional/governmental. Therefore, the focus of water conservation is on outdoor single-family residential use.

Table 4-8: 2010 - 2020 Comparison of Water Demand by Sector

	Consumption 2010 Actual (AF)	2010 Percent of Total	Consumption 2015 Actual (AF)	2015 Percent of Total	Consumption 2020 Actual (AF)	2020 Percent of Total
Single-Family	6,107	72%	4,812	78%	5,405	80%
Multi-Family	352	4%	254	4%	256	4%
Commercial	1,417	17%	752	12%	695	10%
Industrial				-		-
Institutional/ Governmental	172	2%	78	1%	81	1%
Landscape (No Recycled)	444	5%	278	5%	317	5%
Agriculture		-		-		-
Other – Fire Meters	-	-	-	-	2	0%
TOTAL	8,492		6,174		6,756	

An easy way that Single-Family Residential customers in Lakewood’s service area can reduce their water usage is by taking advantage of the online water portal and its many helpful amenities. In 2018, the City went to a full-AMI meter system, replacing existing meters with an AMI system that allowed the City to collect hourly meter data from each meter and use that collected data to create an online portal where customers could view their water consumption, track their estimated bi-monthly bills, identify possible leaks

or unusual fluctuations in water use, pay their bills, and receive tips and notifications regarding possible leaks, spikes in usage. Residents are also able to set personal water usage parameters that would warn them when they neared these thresholds within their billing cycle. These “pro-active” tools can be useful in lowering personal water usage on any given billing cycle, which in turn will result in a lowering of the City’s water consumption as a whole. To date, the City has over 12,400 service accounts enrolled on the online portal, which is a little over 52% of the total accounts that the City of Lakewood services.

4.7 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 Survey⁶ approximately six percent of families considered extremely low income reside in 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 income live in an owner occupied house and 49 percent in rental property. 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 at or below 2020 the low income demand is expected to remain fairly constant.

Table 4-9: 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.	N/A
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 savings as required and enforceable by the City's Emergency Water Conservation Ordinance.	

Table 4-10: Low Income Projected Water Demands (acre-feet)

Low Income Water Demands	2020	2025	2030	2035	2040
Single-Family Residential	262	258	255	252	249
Multi-Family Residential	250	248	245	242	240
TOTAL	511	506	500	494	489

4.8 Sales to Other Water Agencies

The City of Lakewood maintains emergency water connections with four neighboring utilities: Golden State Water Company (GSWC) and the Cities of Cerritos, Signal Hill, and Long Beach. The City has delivered water to Golden State Water Company and the City of Long Beach throughout 2016 to 2020. In the past five years the City of Lakewood has delivered 8,743.12 acre-feet of water to supplement GSWC and the City of Long Beach water supply. Table 4-11 indicates the anticipated water sales to neighboring water purveyors. The City of Lakewood does not project water sales to other water purveyors in the future.

⁶ 2005-2009 American Community Survey 5-Year Estimates Population and Housing Narrative Profile:

Table 4-11: Sales to Other Water Agencies (acre-feet)

Water Distributed	2010	2015	2020	2025	2030	2035	2040
Golden State Water Company	37	0	0.05	0	0	0	0
City of Cerritos	0	0	0	0	0	0	0
City of Long Beach	0	1,116.98	2,370.98	0	0	0	0
TOTAL	37	1,116.98	2,371.03	0	0	0	0

4.9 Import Water Demand

The Lakewood Department of Water Resources no longer relies on the direct purchase of import supplies from wholesale agencies. The last purchase of imported water through the Central Basin Municipal Water District was in April 1991. The likelihood of future direct import purchases is not anticipated. The City of Lakewood maintains two connections to Central Basin MWD for emergency use.

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 (SB X7-7 Table 0 through SB X7-7 Table 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.

Table 5-1: Baselines and Targets Summary From 2015 SB X7-7 Verification Form

Baseline Period	Start Year	End Year	Average Baseline GPCD	Confirmed 2020 Target
10-15 Year	1996	2005	107	99
5 Year	2004	2008	104	

All tables in this section related directly to SB X7-7 are labeled in compliance with the 2020 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 2020 UWMP

Unit of measure used in 2020 UWMP <i>(select one from the drop down list)</i>
Acre Feet
<i>*The unit of measure is consistent with Table 2-1C</i>

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 for the 2020 UWMP update has been calculated to reflect the data set provided by the State.

SB X7-7 Table 2: Method for 2020 Population Estimates

Method used to Determine 2020 Population (may check more than one)	
<input type="checkbox"/>	1. Department of Finance (DOF) or American Community Survey (ACS)
<input type="checkbox"/>	2. Persons-per-Connection Method
<input checked="" type="checkbox"/>	3. State DWR Population Tool
<input type="checkbox"/>	4. Other DWR recommends pre-review

The table below is the detailed service area population for 2020 using the State Department of Water Resources Population Tool (Method 3).

SB X7-7 Table 3: 2020 Service Area Population

2020 Compliance Year Population	
2020	59,465

5.3 Gross Water Use

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. The following table outlines water production during 2020.

SB X7-7 Tables 4: 2020 Gross Water Use

Compliance Year 2020	2020 Volume Into Distribution System	2020 Deductions					2020 Gross Water Use
		Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water	Water Delivered for Agricultural Use	Process Water	
	8,025	991	0	0	0	0	7,034

SB X7-7 Tables 4-A: 2020 Volume Entering the Distribution System, Meter Error Adjustment

Name of Source	Groundwater		
This water source is (check one):			
<input checked="" type="checkbox"/>	The supplier's own water source		
<input type="checkbox"/>	A purchased or imported source		
Compliance Year 2020	Volume Entering Distribution System	Meter Error Adjustment <i>Optional (+/-)</i>	Corrected Volume Entering Distribution System
	8,025	0	8,025

5.4 Baseline Daily per Capita Water Use

The State required 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’s service area. The daily per capita water use is estimated by dividing the amount of water produced by the service area population. The City of Lakewood’s daily per capita water use for 2020 is in SB X7-7 Table 5.

SB X7-7 Table 5: 2020 Gallons Per Capita Per Day (GPCD)

2020 Gross Water <i>From SB X7-7 Table 4</i>	2020 Population <i>From SB X7-7 Table 3</i>	2020 GPCD
7,034	59,465	106

5.5 Compliance Daily per Capita Water Use

The steps taken in the last 35 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 met the target of 99 GPCD in 2019, in compliance with SB X7-7. However, largely due to the COVID-19 pandemic and “stay-at-home” orders in 2020, the City’s water use in 2020 is 106 GPCD, which is about 7 percent above the SB X7-7 target of 99 GPCD. The combined factors of a decrease in rainfall for 2020 as well as the more pressing issue of the COVID-19 “stay-at-home” restrictions, which increased residential water consumption for the majority of the calendar year, significantly affected Lakewood’s gross water use and contributed to the spike in consumption for the reporting year of 2020.

SB X7-7 Table 9: 2020 Compliance

Actual 2020 GPCD ¹	Optional Adjustments to 2020 GPCD				Adjusted 2020 GPCD ¹ <i>(Adjusted if applicable)</i>	2020 Confirmed Target GPCD ²	Did Supplier Achieve Targeted Reduction for 2020?
	Enter “0” if Adjustment not used						
	Extraordinary Events ¹	Weather Normalization ¹	Economic Adjustment ¹	TOTAL Adjustments ¹			
106	0	0	0	0	106	99	NO

NOTES: ¹All values are reported in gallons-per-capita-per-day (GPCD)

² 2020 Confirmed Target GPCD is taken from the Supplier’s SBX7-7 Verification Form Table SBX7-7, 7-F (2015 UWMP)

Table 5-2: 2020 Compliance From SB X7-7 Compliance Form

Actual 2020 GPCD	2020 TOTAL Adjustments	Adjusted 2020 GPCD	2020 Confirmed Target GPCD	Did Supplier Achieve Targeted Reduction for 2020?
106	0	106	99	NO

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 1.

5.6 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.

Per the Gateway Water Management Authority's 2020 Regional Alliance Target Compliance Report (Attachment 16), the Regional Alliance is in compliance with the 2020 Regional Water Use target of 113 GPCD. The City of Lakewood, as part of this Regional Alliance, is therefore in compliance with the 2020 Regional Water Use target.

While the City is a member of the Los Angeles Gateway Region Integrated Regional Management Joint Powers Authority, and is in compliance with the regional target, this UWMP has been created solely on its service area and SB X7-7 compliance will be for the City's service area only.

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. Effective January 1, 2021, CBMWD charges water purveyors \$1,268 per acre-foot for treated water.

The City can purchase MWD supplies through the existing MWD connections. The City can also receive additional supplies in the event of an emergency from the City of Cerritos or Golden State Water Company through two 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 partially helped free the City from dependence on supplementary import water from Metropolitan Water District of Southern California purchased through the Central Basin Municipal Water District.

6.2.1 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.⁷

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...."⁷. The Central Groundwater Basin consists of eight aquifers and aquicludes. The main freshwater bearing aquifers are the Gaspar, Gardena, Gage, Silverado, Lynwood and Sunnyside aquifers.

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

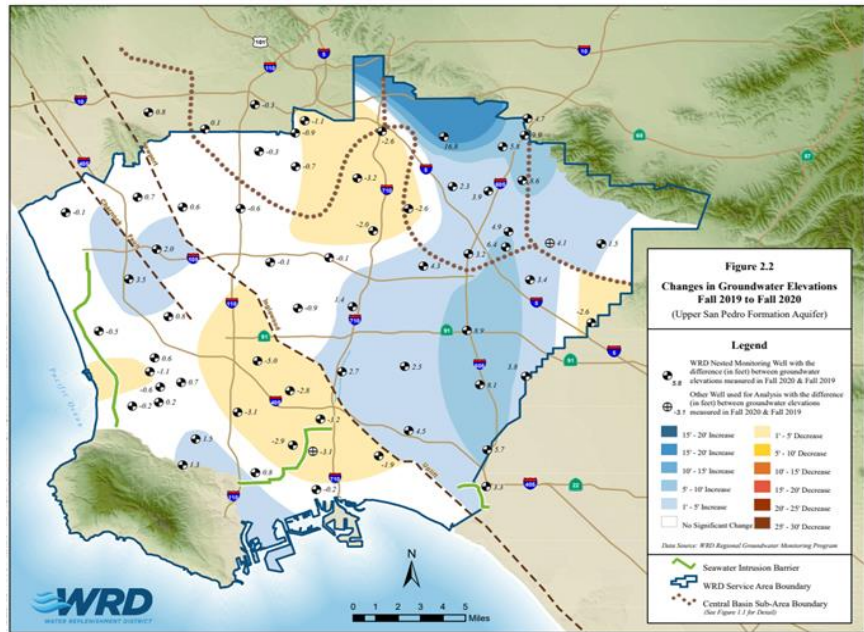
Table 6-1: Central Groundwater Basin Aquifers and Aquicludes

Aquifer/ Aquiclude ⁷	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

6.2.2 Groundwater Management Program

Figure 6-1

The Water Replenishment District of Southern California (WRD) 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 recycled water from the Sanitation District of Los Angeles County. The WRD purchases import supplies and recycled water for groundwater replenishment. The WRD also purchases import and recycled supplies with additional treatment to maintain seawater intrusion barriers.



6.2.3 Central Basin Adjudication

The Central Groundwater Basin became an adjudicated basin in 1966. The third Central Basin Judgment Amendment was entered by the Los Angeles Superior Court on December 23, 2013 (Attachment 2). The Court allows the water rights holders to have direct input into how the Judgment is administered and enforced. Under the third 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.

6.2.4 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 1991 of 1,500 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 2020 Lakewood pumped 7,034 acre-feet of water for use by City of Lakewood customers and an additional 991 acre-feet was delivered to the City of Long Beach as part of the Lakewood/Long Beach Water Purchase Agreement.

Table 6-2: Groundwater Volume Pumped

Groundwater Type	Location or Basin Name	2016	2017	2018	2019	2020
Alluvial Basin	Central Groundwater Basin	6,746	7,020	7,149	6,570	7,034
TOTAL (acre-feet)		6,746	7,020	7,149	6,570	7,034

Table 6-3: 2020 Total Production

2020 Production in acre-feet													
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	TOTAL
Delivered to Long Beach:	322	137	0	0	0	0	0	0	1	0	112	419	991
Total used by City of Lakewood Customers:	464	499	441	476	615	644	691	762	671	660	572	539	7,034

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.

6.3 Wastewater and Recycled Water

Lakewood depends on 100% groundwater from the Central Groundwater Basin for drinking water and utilizes recycled water (about 6% of total water supply) for over 58% of the City’s irrigation. Lakewood has operated a recycled water system since 1989. Participating agencies for operation of Lakewood Recycled Water Systems include:

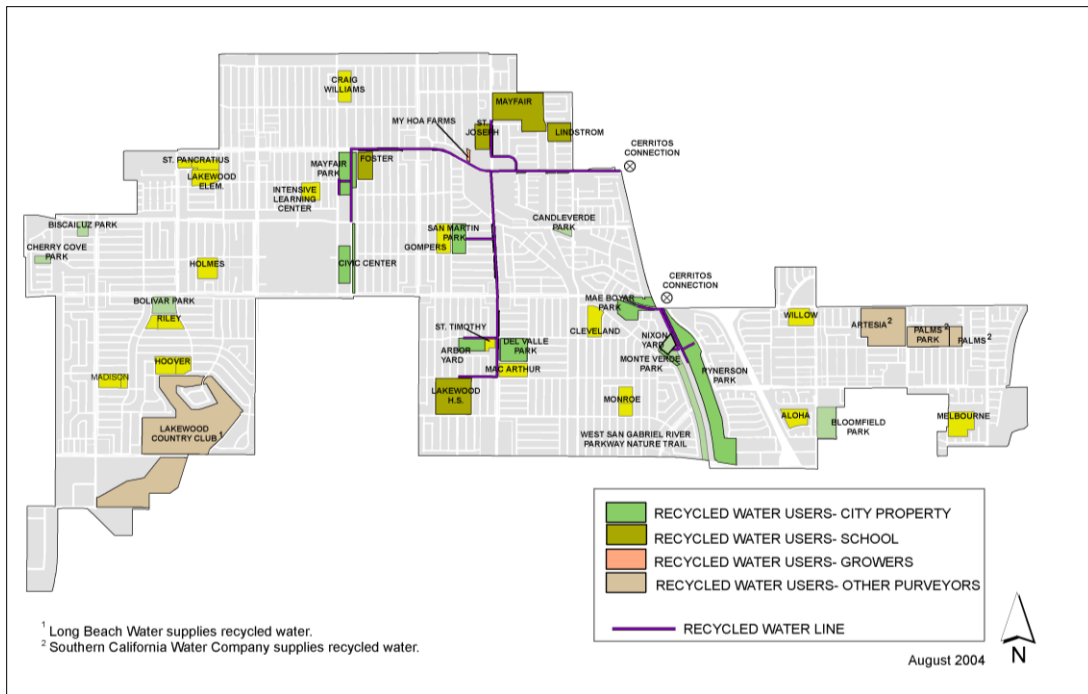
Table 6-4: Participating Agencies (Recycled Water)

Type of Agency	Agency	Role in 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 30 years, the City of Lakewood has reduced its reliance on potable water by 14,078 acre-feet or an average of 469 acre-feet each year through the use of recycled water. The City’s 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 pumping and distribution system. The City of Lakewood maintains three metered recycled water service connections with the City of Cerritos.

Figure 6-2 identifies the recycled water connections to the Cerritos system, and the current recycled water customers.

Figure 6-2: City of Lakewood Recycled Water System



The wastewater from the 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. 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 6-5: Wastewater Collected Within Service Area in 2020

Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2020	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	25,938	Sanitation Districts Of Los Angeles County	Long Beach Water Reclamation Plant (LBWRP)	No	No
Total Wastewater Collected from Service Area in 2020:		25,938				

NOTE: Volume of wastewater collected in acre-feet

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 2020 information concerning the Sanitation District of Los Angeles County as it relates to the City of Lakewood and local surrounding agencies includes:

- Approximately 23.09 MGD of wastewater was treated at the LCWRP,
- Approximately 15.19 MGD of wastewater was treated at the LBWRP,
- Approximately 19.86 MGD of recycled water was produced and discharged from the LCWRP,
- Approximately 11.30 MGD of recycled water was produced and discharged from the LBWRP,
- Approximately 0.41 MGD (a total of 145 million gallons) of recycled water from the LCWRP was reused within the City of Lakewood’s service area,
- An additional 0.10 MGD (a total of 37 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 5.74 MGD (a total of 2,102 million gallons) of recycled water from the LCWRP was delivered through the Cerritos, Lakewood, Bellflower and CBMWD distribution systems and reused.

Table 6-6: Wastewater Treatment and Discharge Within Service Area in 2020

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	2020 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	25,938	22,301	464	6,450
Total							25,938	22,301	464	6,450

NOTES: Volume of wastewater treated/recycled in acre-feet

Table 6-7 below details our actual 2020 recycled water use in comparison to projected recycled water use. In the 2015 UWMP Update, it was projected that the City of Lakewood would use 502 acre-feet in 2020. However, the City’s recycled water use decreased to 446 acre-feet.

Table 6-7: 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual

Beneficial Use Type	2015 Projection for 2020	2020 Actual Use
Agricultural irrigation		
Landscape irrigation (excludes golf courses)	502	446
Golf course irrigation		
Commercial use		
Industrial use		
Geothermal and other energy production		
Seawater intrusion barrier		
Recreational impoundment		
Wetlands or wildlife habitat		
Groundwater recharge (IPR)		
Reservoir water augmentation (IPR)		
Direct potable reuse		
Other (Description required)		
Total	502	446

Current usage trends show a slight decrease from year to year but with new water conservation efforts and goals looming, Lakewood’s reliance on recycled water could increase. Taking this into account, Lakewood’s recycled water use is projected to increase slightly from the 2020 level and remain relatively constant over the next 20-years.

Table 6-8: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area

Name of Supplier Producing (Treating) the Recycled Water:		CITY OF CERRITOS							
Name of Supplier Operating the Recycled Water Distribution System:		CITY OF LAKEWOOD							
Supplemental Water Added in 2020		N/A							
Source of 2020 Supplemental Water		N/A							
Beneficial Use Type	Potential Beneficial Uses of Recycled Water	Amount of Potential Uses of Recycled Water (Quantity)	General Description of 2020 Uses	Level of Treatment	2020	2025	2030	2035	2040
Landscape irrigation (excludes golf courses)	Irrigation of Parks and Medians	450	Irrigation of Parks and Medians	Tertiary	446	450	450	450	450
Total:					446	450	450	450	450

6.4 Recycled Water System Expansion

The City of Lakewood examined potential expansion of the recycled water system in the fall of 2009. The City contracted with Willdan Associates for the completion of a feasibility study regarding the expansion of the recycled water system. (Attachment 7 contains the complete study.) Based on Willdan’s extensive study and professional estimates, the cost for an expansion of the City’s recycled water system would cost roughly \$17.7 million dollars in 2015 dollars. As of the 2015 UWMP, this project was deemed cost prohibitive and no plans were made to expand our system. As of the 2020 update of the UWMP, the City of Lakewood continues to have no immediate plans to expand our existing recycled water system.

6.5 Development of Desalinated Water

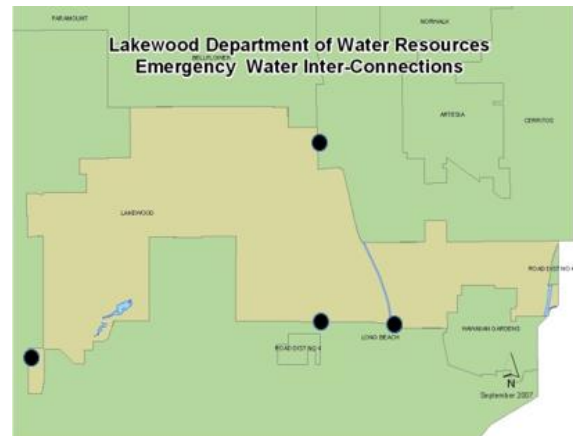
The City of Lakewood Department of Water Resources currently has no plans and no need for the use of desalinated water to meet water supply demands.

6.6 Transfer or Exchange Opportunities

The City of Lakewood currently maintains four emergency water supply inter-connections with adjacent water purveyors, the Cities of Cerritos, Signal Hill, and Long Beach, and Golden State Water Company (GSWC). Both Cerritos and GSWC connections are bi-directional, and the other two connections with the cities of Long Beach and Signal Hill are now one-way interconnections.

These connections have the potential for transfer and/or exchange of water supply during a water shortage emergency associated with water quality problems, disaster, drought, and system maintenance. The map above shows the locations of the emergency interconnections.

Figure 6-3



6.7 Summary of Existing and Planned Sources of Water

The Central Basin Groundwater judgment sets out the annual pumping rights of each adjudicated water rights holder; provides for carryover of 60% of annual pumping rights for one year. Lakewood’s adjudicated pumping allocation is 9,432 acre-feet with opportunities to increase that amount through carryover when deemed necessary.

Tables 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 6-9: Water Supplies – Actual

Water Supply	Additional Detail on Water Supply	2020	
		Actual Volume	Water Quality
Groundwater (not desalinated)		10,932	Drinking Water
Recycled Water		446	Recycled Water
Total		11,378	

NOTES: Groundwater includes allocated pumping allocation of 9,432 acre-feet. In addition, Lakewood has 1991 drought carryover of 1,500 acre-feet for a total of 10,932 acre-feet groundwater available to the City of Lakewood.

Table 6-10: Water Supplies — Projected

Water Supply	Projected Water Supply			
	2025	2030	2035	2040
	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Groundwater	9,432	9,432	9,432	9,432
Recycled Water	450	450	450	450
Total	9,882	9,882	9,882	9,882

6.8 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. Since the 2015 Urban Water Management Plan Update, the City has begun a new well (Well 28) construction which should be fully operational in 2021. Begun in 2020, a new treatment system for Well 13A has been designed and will be constructed in 2021. With the goal of meeting the future challenges of water demand and water quality, the City is addressing future pipeline replacement, well and reservoir maintenance, and system upgrades to ensure a fully operational, efficient, safe, and reliable water system for the years to come.

6.9 Energy Intensity

The City’s water supply facilities include ten water wells, a 2,500 gallons per minute water treatment facility, three water storage facilities, two connections to Metropolitan Water District of Southern California import supplies through Central Basin Municipal Water District, and four emergency interconnections with GSWC, the City of Cerritos, the City of Long Beach, and the city of Signal Hill. Billing data was provided by Southern California Edison (SCE) for each of the facilities operated by the City. There are three reporting options on available data which include the following:

- Option 1: Energy Intensity – Water Supply Process Approach by the individual Water Management Process
- Option 2: Energy Intensity – Total Utility Approach using the sum of all Water Management Processes and total energy for the system
- Option 3: Energy Intensity – Multiple Water Delivery Products by breaking down percentages for

retail potable, retail non-potable, agricultural, etc.

Table 6-11 summarizes the City’s supply facilities energy intensity using the total utility approach.

Table 6-11: Recommended Energy Intensity – Total Utility Approach

Enter Start Date for Period	01/01/2020	Urban Water Supplier Operational Control		
End date	12/31/2020	Sum of all Water Processes	Non-Consequential Hydropower	
		Total Utility ¹	Hydropower	Net Utility
Volume of Water Entering Process (AF)		8,025	0	8,025
Energy Consumed (kWh)²		3,825,398	0	3,825,398
Energy Intensity (kWh/AF)		476.7	0	476.7
NOTES: ¹ Total Utility includes water directly into distribution system (7,034) and sold to LB Water (991)				
² Total energy consumed includes the net effect of 361,656 kWh of renewable solar energy produced by Plant 4				

The City takes advantage of renewable solar energy at its Plant 4 facility. This renewable energy source resulted in 361,656 kWh of energy being produced which helped lower the energy intensity from 521.8 kWh/AF to 476.7 kWh/AF for 2020

Chapter 7: Water Supply Reliability Assessment

7.1 Introduction

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 if basin replenishment decreases. 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.

A change in the Central Groundwater Basin Judgment also allows greater flexibility for the groundwater producer. The City is now able to carryover up to 60 percent in excess of our annual water allowance beginning in 2016. 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 has moved 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 is 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 has been online since 2019 and has been instrumental in WRD meeting its goal of independence from imported water with no imported water purchases planned for Fiscal Year 2021-2021 according to the WRD 2021 Engineering Survey and Report.

7.1.1 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 1,500 acre-feet in drought carryover. 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 groundwater extraction is the total annual pumping allocation and 60 percent carryover. Recycled water is demand driven. The purchase of recycled water is based on customer demand, which varies based on local rainfall.

The City of Lakewood has already shown resiliency in their water supply in enduring a five-year drought period from 2012 to 2016. The supply and demand data collected for these dry year has proven that Lakewood’s water supply can remain sustainable when faced with adverse conditions, and can continue to provide a consistent water supply to their residents.

7.2 Water Service Reliability Assessment

In order to determine the Average Year, Single-Dry Year, and Five-consecutive dry years, the City reviewed the historical rainfall data from Los Angeles County Department of Public Works Climatological Record Montana Station 225.

Table 7-1 identifies each Year Type and the corresponding supply available to serve the demands during historical average, single, and multiple dry year conditions. The Volume Available combines both potable and recycled water and is presented as 100% reliable for all year types.

Table 7-1: Basis of Water Year Data (Reliability Assessment)

Year Type	Base Year	Available Supplies if Year Type Repeats	
		<input type="checkbox"/>	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		<input checked="" type="checkbox"/>	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available	% of Average Supply
Average Year	2020	9,882	100%
Single-Dry Year	2018	9,882	100%
Consecutive Dry Years 1st Year	2012	9,882	100%
Consecutive Dry Years 2nd Year	2013	9,882	100%
Consecutive Dry Years 3rd Year	2014	9,882	100%
Consecutive Dry Years 4th Year	2015	9,882	100%
Consecutive Dry Years 5th Year	2016	9,882	100%

7.2.1 Normal Year

A normal water-year can be described as a year that most closely represents median local runoff levels and patterns. The City selected the year 2020 to represent the normal year or average year. The average rainfall level in the City of Lakewood for 2020 was 14.22 inches.

Table 7-2 summarizes the City’s projected supply and water demands through 2040. These future demand projections are based on the estimated population levels in Lakewood over the next twenty years as described in Section 3.5 and the projected per capita water demands described in Section 4.4.1. Future supply projections are based on the reasonably available groundwater volumes described in Section 6.7. Based on the City’s current/projected water supply the City has more than sufficient available resources to serve future water demands.

Table 7-2: Normal Year Supply and Demand Comparison

	2025	2030	2035	2040
Supply totals <i>(from Table 6-9)</i>	9,882	9,882	9,882	9,882
Demand totals <i>(from Table 4-3)</i>	7,138	7,071	7,005	6,939
Difference	2,744	2,811	2,877	2,943

7.2.2 Single Dry Year

A single-dry year can be described as a year that shows below average rainfall for one year. The City chose the year 2018 to represent the single dry year. The average rainfall level in the City of Lakewood for 2018 was 3.65 inches.

Table 7-3 summarizes the City's projected supply and demand through 2040 for a single dry year.

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

	2025	2030	2035	2040
Supply totals	9,882	9,882	9,882	9,882
Demand totals	7,071	7,005	6,939	6,874
Difference	2,811	2,877	2,943	3,008

7.2.3 Five-Consecutive-Year Drought Water Supply Years

Five consecutive dry years can be described as a five-year period that shows below average rainfall. The City chose the year 2012 to 2016 to represent five consecutive dry years. The average rainfall levels in the City of Lakewood for calendar years 2012 to 2016 were 8.31 inches, 7.55 inches, 5.04 inches, 10.12 inches, and 6.48 inches respectively.

Table 7-4 summarizes the City’s projected supply and demand through 2040 for multiple dry years.

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

		2025	2030	2035	2040
First year	Supply totals	9,882	9,882	9,882	9,882
	Demand totals	7,071	7,005	6,939	6,874
	Difference	2,811	2,877	2,943	3,008
Second year	Supply totals	9,882	9,882	9,882	9,882
	Demand totals	7,005	6,939	6,874	6,810
	Difference	2,877	2,943	3,008	3,072
Third year	Supply totals	9,882	9,882	9,882	9,882
	Demand totals	6,939	6,874	6,810	6,746
	Difference	2,943	3,008	3,072	3,136
Fourth Year	Supply Totals	9,882	9,882	9,882	9,882
	Demand Totals	6,874	6,810	6,746	6,683
	Difference	3,008	3,072	3,136	3,199
Fifth Year	Supply Totals	9,882	9,882	9,882	9,882
	Demand Totals	6,810	6,746	6,683	6,621
	Difference	3,072	3,136	3,199	3,261

7.2.4 Five-Year Drought Risk Assessment

Historically, water demands have increased in dry years due to climate conditions, but recently dry years have shown a decrease in water demands due to both voluntary and mandatory conservation efforts. This Drought Risk Assessment takes both of these assumptions into account and the City will make the conservative assumption that water demand will not increase dramatically during the five-year drought period but will see a slight decrease.

For this Drought Risk Assessment (as well as the UWMP as a whole), the supply of water to the City will remain the same for the five-year period as the 2019 Regional Groundwater Monitoring Report by the Metropolitan Water District indicates that the groundwater supply will continue to be a reliable source for the foreseeable future due to artificial replenishment, natural replenishment, and controlled pumping.

Using the assumptions and methodology discussed above, the Drought Risk Assessment shows no anticipated shortages over a five-year drought period beginning in 2021 (summarized in Table 7-5).

Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)

2021	Total
Total Water Use	7,190
Total Supplies	9,882
Surplus/Shortfall w/o WSCP Action	2,692
Planned WSCP Actions (Use reduction and supply augmentation)	
WSCP – supply augmentation benefit	0
WSCP – use reduction savings benefit	0
Revised Surplus/Shortfall	2,692
Resulting % Use Reduction from WSCP action	0%
2022	Total
Total Water Use	7,177
Total Supplies	9,882
Surplus/Shortfall w/o WSCP Action	2,705
Planned WSCP Actions (Use reduction and supply augmentation)	
WSCP – supply augmentation benefit	0
WSCP – use reduction savings benefit	0
Revised Surplus/Shortfall	2,705
Resulting % Use Reduction from WSCP action	0%
2023	Total
Total Water Use	7,164
Total Supplies	9,882
Surplus/Shortfall w/o WSCP Action	2,718
Planned WSCP Actions (Use reduction and supply augmentation)	
WSCP – supply augmentation benefit	0
WSCP – use reduction savings benefit	0
Revised Surplus/Shortfall	2,718
Resulting % Use Reduction from WSCP action	0%

2024	Total
Total Water Use	7,151
Total Supplies	9,882
Surplus/Shortfall w/o WSCP Action	2,731
Planned WSCP Actions (Use reduction and supply augmentation)	
WSCP – supply augmentation benefit	0
WSCP – use reduction savings benefit	0
Revised Surplus/Shortfall	2,731
Resulting % Use Reduction from WSCP action	0%
2025	Total
Total Water Use	7,138
Total Supplies	9,882
Surplus/Shortfall w/o WSCP Action	2,744
Planned WSCP Actions (Use reduction and supply augmentation)	
WSCP – supply augmentation benefit	0
WSCP – use reduction savings benefit	0
Revised Surplus/Shortfall	2,744
Resulting % Use Reduction from WSCP action	0%

Chapter 8: Water Shortage Contingency Plan

8.1 Water Supply Reliability Analysis

The Water Shortage Contingency Plan outlines the City's planned response to water supply shortages. The water conservation measures and progressive restrictions on water use outlined in this WSCP are designed to provide a measure of certainty to water users and enable the City to control water use, provide a consistent water supply, and accurately plan and implement water management measures that will benefit the public.

This WSCP describes the measures to be implemented during declared water shortages, or declared water emergencies by either City, State, or Federal government. The WSCP outlines six stages of drought response actions to be implemented in times of shortage, with water use restrictions that increase in direct response to decreasing water supply.

As of October 13, 2009, the City adopted Ordinance 2009-5 to amend Section 7500-7513 of the Lakewood Municipal Code. This ordinance serves to expand upon the City's water conservation regulations and Water Shortage Contingency Plan (WSCP) already in place, including the ability to impose up to 50% mandatory reduction in water use (Phase 5 of the Lakewood WSCP). A copy of the Lakewood Municipal Code Section 7500-7513 is included as Attachment 4.

8.2 Annual Water Supply and Demand Assessment Procedures

The City's water supply sources include local groundwater and recycled water supplies. The City maintains ten water wells, a 2,500 gallons-per-minute water treatment facility, three water storage facilities, two connections to Metropolitan Water District of Southern California import supplies through Central Basin Municipal Water District, and four emergency interconnections with GSWC, the City of Cerritos, the City of Long Beach, and the city of Signal Hill. Based on information provided by the City, it is assumed that the City's water supply is reliable and 100% available during normal, single, and multiple drought conditions.

The Metropolitan Water District's 2019 Annual Progress Report (Attachment 15) assessed the conditions for both the Central and West Coast Basins of Los Angeles County. Their comprehensive analysis included analyzing groundwater levels, water quality, and future plans for preserving groundwater resources. This comprehensive analysis indicates that the groundwater supply will continue to be a reliable source for the foreseeable future due to artificial replenishment, natural replenishment, and controlled pumping.

8.2.1 Decision Making Process

In accordance with CWC 10632, the City will conduct an annual water supply and demand assessment, or annual assessment, by July 1st of each year, beginning in the year following the adoption of the current UWMP (July 1, 2022).

The City will compile and prepare a written report that addresses the results of this annual assessment. A copy of the annual report will be presented to the City Council for review. If any findings or recommendations are outlined in this report, the City Council can vote to approve and implement the recommendations during their regularly scheduled meetings.

Department of Water Resources staff will be responsible for working with other City Departments, as well as working closely with state and regional agencies to draft and prepare the annual water supply and demand assessment, recommending possible actions, presenting the assessment to City Council, and submitting the assessment to DWR on an annual basis.

8.2.2 Data and Methodologies

The key data inputs and methodologies that the City will use to determine the reliability of its water supply for the current year and one dry year include:

- Current year unconstrained demand, considering weather patterns, population growth/decline, or other factors that would influence consumer demand
- Current year available supply, taking into consideration hydrological and regulatory conditions that would affect the City’s available water supply
- Existing infrastructure needs and capabilities, including a project list and/or schedule to determine which projects could increase or reduce the City’s water supply
- A finite set of evaluation criteria that can be relied on for consistency for each annual water supply and demand assessment
- A detailed description of each of the City’s water supply sources

8.3 Six Standard Water Shortage Stages

This Water Shortage Contingency Plan outlines six specific phases of water conservation that closely resemble the new requirements of this Urban Water Management Plan. These phases are designed to be implemented during times of water supply shortage to ensure that the demand for water by consumers is met while maintaining control over water use and water supply. The City’s WSCP includes both voluntary and mandatory water shortage contingencies which vary according to the severity of the water shortage.

These phases may be implemented by Council action in the event of a City, State or Federal water conservation mandate, as well as any unforeseen water emergency.

The six phases in the City’s WSCP are summarized in Table 8-1 below.

Table 8-1: Water Shortage Contingency Plan Levels

Phases in City of Lakewood Water Shortage Contingency Plan			Crosswalk	2020 WSCP Mandated Shortage Levels			
Phase	Percent Supply Reduction	Water Supply Condition		Stage	Percent Supply Reduction	Water Supply Condition	Compliance with water savings measures
Voluntary	Up to 10%	Declaration of Drought by State or Regional Agency calling for 10% reduction		1	Up to 10%	Normal	Voluntary
I	Up to 10%	Declaration of Drought by State or Regional Agency calling for 10% reduction		2	Up to 20%	Slightly Restricted	Mandatory
II	Up to 20%	Declaration of Drought by State or Regional Agency calling for 20% reduction		3	Up to 30%	Moderately Restricted	Mandatory
III	Up to 30%	Declaration of Drought by State or Regional Agency calling for 30% reduction		4	Up to 40%	Restricted	Mandatory
IV	Up to 40%	Halt of artificial recharge of groundwater basin over 3 year period		5	Up to 50%	Severely Restricted	Mandatory
V	Up to 50%	Halt of artificial recharge of groundwater basin over 5 year period		6	>50%	Extremely Restricted	Mandatory

8.4 Shortage Response Actions

The shortage response actions that must be taken include actions related to the reduction of demand for water as well as the suggested actions that would help augment the supply of water to consumers in the event of a water shortage.

8.4.1 Demand Reductions

The City incorporates a mechanism to penalize consumers for violation of implemented water use restrictions in the WSCP. In the event of a water shortage, the City can also implement certain measures to reduce the demand for water. Table 8-2 outlines these demand reduction measures in the WSCP.

Table 8-2: Demand Reduction Actions

Phase	Demand Reduction Actions by Supplier	Estimated Water Savings Level	Penalty, Charge, or Other Enforcement?
Voluntary	Public Education Program, Voluntary Rationing	Not Quantified	No
I	Voluntary Rationing	<10%	No
II	Use Prohibitions/Restrictions	<10-40%	No
III			
IV	Flow Restriction on Water Use Restriction Violators	<1%	No
V	Reduce Pressure in Water Lines	8-10%	No

8.4.2 Supply Augmentation

Table 8-3 summarizes the restrictions and prohibitions on end users for each phase of water shortage responses implemented by the City.

Table 8-3: Supply Augmentation and Other Actions

Phase	Supply Augmentation Methods and Other Actions by Water Supplier	Estimated Water Savings Level	Penalty, Charge, or Other Enforcement?
Voluntary	Education for water conservation methods	Low	No
Voluntary	Public outreach for voluntary reduction in water use	Medium	No
Voluntary	End Users must repair leaks , breaks, or malfunctions within six (6) days	Medium	No
Voluntary	Other-Minimize use of potable water for washing hard surfaces	Medium	Yes
Voluntary	Landscape- Restrict or prohibit runoff from landscape irrigation	Medium	Yes
I	Potable water used for washing down hard surfaces restricted to no more than two (2) times during a calendar month	Medium	Yes
I	Washing of vehicles shall be done with a bucket or hose equipped with a positive shut off nozzle	Medium	Yes
I	End Users must repair leaks , breaks, or malfunctions within five (5) days	Medium	Yes
I	Sprinklers shall be adjusted to minimize runoff from landscape on to hardscape areas	High	Yes
I	Landscape irrigation recommended during the early morning hours for no more than ten (10) minutes at a time	Medium	Yes
II	Residential and Commercial landscaping restricted to 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 through September	High	Yes

Phase	Supply Augmentation Methods and Other Actions by Water Supplier	Estimated Water Savings Level	Penalty, Charge, or Other Enforcement?
II	Landscape irrigation restricted to 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 October through May	High	Yes
II	Non-residential water customers with a consumption in excess of 25,000 cubic feet shall prepare a water conservation plan within sixty (60) days of the declared water shortage	Medium	Yes
II	End Users must repair leaks , breaks, or malfunctions within four (4) days	High	Yes
III	Residential and Commercial landscaping restricted to 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 through September	High	Yes
III	Landscape irrigation restricted to 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 October through May	High	Yes
III	Irrigation of commercial nurseries and growers, active parks, golf courses, school grounds restricted to no more than three (3) times during a seven (7) day period for no more than ten (10) minutes	High	Yes
III	End Users must repair leaks , breaks, or malfunctions within three (3) days	High	Yes
IV	Residential and Commercial landscaping restricted to 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 through September	High	Yes
IV	Landscape irrigation restricted to no more than one (1) time during a fourteen (14) day period for no more than ten (10) minutes at a time during the months of October through May	High	Yes
IV	Irrigation of commercial nurseries and growers, active parks, golf courses, school grounds restricted to no more than two (2) times during a seven (7) day period for no more than ten (10) minutes	High	Yes
IV	End Users must repair leaks , breaks, or malfunctions within two (2) days	High	Yes
V	Residential and Commercial landscaping restricted to only permanent trees and shrubs with handheld bucket or drip irrigation system no more than two (2) gallons per hour one (1) time during a seven (7) day period	High	Yes
V	Irrigation of commercial nurseries and growers restricted to one (1) time during a seven (7) day period for no more than ten (10) minutes at a time	High	Yes
V	Irrigation of parks, golf courses, school grounds restricted to no more than two (2) times during a seven (7) day period for no more than ten (10) minutes	High	Yes
V	End Users must repair leaks , breaks, or malfunctions within 24 hours	High	Yes

8.4.3 Operational Changes

In the event of an extreme water shortage, the City will place restrictions based on the severity of shortage, but not limited to the following in accordance with CWC 10632(a)(4)(C) and CWC 10632.5(a).

- Limits on watering days
- Obligation to fix leaks or line breaks within an expedited timeframe
- No washing down of driveways
- Limits on filling residential swimming pools and spas
- Limits on filling of ornamental lakes/ponds
- Limits on washing of vehicles
- Establishment of water allocations, including penalty rates for water used above an allocation
- No watering or irrigating
- No new service connections allowed

8.4.4 Additional Mandatory Restrictions

The City's customers shall comply with the mandatory water shortage response actions listed in Table 8-1 associated with a level 3 or higher water shortage in accordance with CWC 10632(a)(4)(d)

8.4.5 Emergency Response Plan

In the event that the City were unable to the demand placed upon it by customers due to an unforeseen emergency, the City could declare a water emergency and take necessary actions as outlined in the Water Shortage Contingency Plan. Lakewood has identified, and will continue to identify, vulnerabilities to the water system to help mitigate any potential impacts to the ability to serve its customers.

8.4.6 Seismic Risk Assessment and Mitigation Plan

The City of Lakewood's 2018 Hazard Mitigation Plan (Attachment 14) has identified key areas within the City that would be most susceptible to damage during extraordinary emergencies including earthquakes, floods, windstorms, drought, and other hazards such as extreme temperatures, landslides, wildfires, subsidence, and volcanic events.

The 2018 Hazard Mitigation Plan identified the high risk of earthquakes and seismic activity to all City facilities, with specific risk to Water infrastructure in the form of potential pipeline breaks, damage to City wells and treatment plants, and identified a high risk of City-wide water service interruption. In the event of major seismic activity, if the City's water systems are damaged or disrupted, the City will follow protocols in place detailed in their Disaster Response Plan (Attachment 3).

8.4.7 Shortage Response Action Effectiveness

All of the shortage response actions in the City's WSCP have the intended goal of reducing water demand to below the available supply of water at any given water shortage phase. In order to ensure that the shortage actions in place are effective in reaching the goal of reducing water demand, the City will closely analyze consumption trends on a daily, weekly, and monthly basis by utilizing the consumption data gleaned from their full-AMI metering system as described in Section 8.9.

After careful analysis by City staff, if it is found that the shortage response actions in place are ineffective in reaching the reduced water demand, the City will look to update the shortage response actions in place to achieve the desired results

8.5 Communication Protocols

In the event of an emergency water shortage or any City, State, or Federal water conservation mandates, the City will inform customers, the public, and the necessary local, regional, and state government entities in regard to these current or predicted events.

8.6 Compliance and Enforcement

The Water Shortage Contingency Plan (and corresponding ordinances) provide a mechanism to penalize consumers for violation of the water use restrictions. These penalties range from a written warning to the interruption of water service. The WSCP 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 can be issued a citation for improper water use. The penalties gradually increase with subsequent violations. The 2009 amendment to the WSCP increased the fine for violations to the ordinance.

While the mechanism to penalize consumers for improper water use does exist within the City's WSCP, the City prefers to educate consumers on the need for water conservation rather than penalize them with fines.

This method of conservation has served useful in the past and only potentially drastic water shortages would change the current method employed.

Table 8-4: 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 Violation: Written Notice of Violation \$ 100.00 fine (payable in no more than 15 days)	Normal Water Supply
Fourth Violation: Written Notice of Violation, \$200.00 fine & Installation of Flow Restrictor (Restrictor shall be in place for no less than 24 hours and customer must pay fees prior to removal)	Normal Water Supply
Fifth & Subsequent Violations: Written Notice of Violation, \$500.00 fine & Installation of Flow Restrictor (Restrictor shall be in place for no less than 48 hours and customer must pay fees prior to removal)	Normal Water Supply

8.7 Legal Authorities

The City of Lakewood is governed by the City Council. The Council is made up of five (5) elected members, serving four (4) year terms. Lakewood’s City Council has enacted previous water conservation ordinances and resolutions to prepare the City for any water shortages.

Per California Water Code Division 1, Section 350, “The governing body of a distributor of a public water supply, whether publicly or privately owned and including a mutual water company, shall declare a water shortage emergency condition to prevail within the area served by such distributor whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to the extent that there would be insufficient water for human consumption, sanitation, and fire protection”, the City’s Council will declare a water shortage.

8.8 Financial Consequences of WSCP Activation

As water consumption decreases, there is a proportional decrease in the revenue generated though water sales. Based on the direct relationship between water consumption and water revenue, it is possible that unanticipated water shortages or mandated water conservation restrictions could result in an annual revenue shortfall.

As the City progresses from Phase I to Phase V of the WSCP, a proportional decrease in water revenue will be realized and City Council could be forced to enact emergency water conservation rates in order to stabilize revenue. Steps can, however, be taken that would aid in alleviating some of the strain on water revenues caused by voluntary or mandatory water conservation.

Some of these steps include:

- The City can analyze and consider reducing current operation and maintenance expenses
- The City can analyze and consider reducing future projected operation and maintenance expenses
- The City can analyze and consider prioritizing and deferring specific capital improvement projects
- The City can analyze and consider enacting an emergency water conservation rate structure
- The City can implement the use of the Water Rate Stabilization Fund to help offset the decrease in revenue

8.9 Monitoring and Reporting

In accordance with CWC 10632(a)(9), the City will monitor, analyze, and report on water production and consumption levels. Lakewood utilizes a full-AMI meter system for all customers across all account types,

and uses the hourly data transmitted from these AMI meters to determine the consumption of water throughout the City’s service area. In the event of a water shortage or the implementation of City, State, or Federal water conservation mandates, the City will analyze daily, weekly, and rolling four-week average consumption totals to measure the effectiveness of water conservation efforts in all phases of the WSCP.

A more detailed summary of these monitoring mechanisms is described in Table 8-5.

Table 8-5: Water Use Monitoring Mechanisms

Mechanisms for Determining Actual Reductions	Type and Quality of Data Expected
Analysis of Daily Consumption	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 of Weekly Consumption	
Analysis of Rolling 4 Week Average	
Analysis of Water User(s) 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.

8.10 WSCP Refinement Procedures

The intent of the WSCP is to provide shortage mitigation strategies that can be employed should the need arise. The water shortage response actions that are listed in Table 8-2 will be routinely monitored in the event they are implemented. If these water shortage response actions are ineffective in meeting the required reduction, the Lakewood City Council will have the authority to amend the Water Shortage Contingency Plan as it is deemed necessary.

8.11 Special Water Feature Distinction

In order to promote water conservation and to comply with any city, state, or federal water conservation mandates, the City categorizes the use of potable water in a fountain or decorative water feature, except where the water is part of a recirculating system, as prohibited. This prohibited category is separate and distinct from all other water features in the WSCP.

8.12 Plan Adoption, Submittal, and Availability

As of October 13, 2009, the City adopted Ordinance 2009-5 to amend Section 7500-7513 of the Lakewood Municipal Code. This ordinance serves to expand upon the City’s water conservation regulations and Water Shortage Contingency Plan (WSCP) already in place, including the ability to impose up to 50% mandatory reduction in water use (Phase 5 of the Lakewood WSCP). A copy of the Lakewood Municipal Code Section 7500-7513 is included as Attachment 4.

At of the completion of this Urban Water Management Plan, the City will submit an electronic copy of the City’s Water Shortage Contingency Plan to the DWR for review and will coordinate with DWR reviewers as necessary.

The City will also submit a CD of the adopted WSCP to the California State Library at the following address:

California State Library
 Government Publications Section
 PO Box 942867
 Sacramento, CA 94237-001
 Attention: Coordinator, Urban Water Management Plans

Commencing no later than August 15, 2021, the City will have a copy of the adopted WSCP available for

public review at the Department of Water Resources office (see address below) during normal business hours.

City of Lakewood
Department of Water Resources
5812 Arbor Road
Lakewood, CA 90713

Chapter 9: Demand Management Measures

9.1 Implemented Demand Management Measures

The UWMP Act requires a discussion of the Demand Management Measures (DMMs) that have been implemented or are scheduled for implementation, the implementation schedule of any new DMMs, and the methods, if any, that the City will use to evaluate their effectiveness.

9.1.1 Water Survey Programs for Single- and Multi-family 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 5 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.

9.1.2 Water Conservation Rebate Program

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 has allocated \$25,000 annually for the program.

Table 9-1: Water Conservation Rebates

	2016/17	2017/18	2018/19	2019/20	2020/21
Number of Turf Removal Projects	28	7	11	4	7
Number of Water Conservation Devices	17	2	9	5	3
Sub-surface	N/A	N/A	N/A	N/A	N/A
Program Cost	\$20,584	\$5,628	\$7,167	\$3,282	\$4,356

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 City of Lakewood’s 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. The rebate amount is \$0.50 per square foot with a minimum of 40 and maximum of 800 square feet. Since the turf removal rebate program began in 2011, over \$106,000 in rebates have been made to Lakewood water customers. All rebates are awarded as a credit on the water bill.

Though Central Basin Municipal Water District and Metropolitan Water District of Southern California both 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.

Data in Table 9-1 shows that the amount of approved/completed Turf and Device Rebates are declining. City Staff is looking into making changes to this program to provide residents with more incentive to use this program, which will aid in meeting the City's future state-mandated conservation goal.

See Attachment 1 for the details in the water conservation device and turf removal rebate programs.

9.1.3 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.

9.1.4 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. Unfortunately, due to COVID-19 restrictions, these community events were cancelled in 2020, with the scheduled 2021 events in potential jeopardy of cancellation as well.

9.1.5 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 (Attachment 9). Location of the publication on the City website is advertised to all residential and business water customers via an insert in their utility bill (Attachment 8). *Lakewood Connect*, the City’s e-magazine, is also a tool used by the City to highlight water conservation. See Attachment 10.

The City developed a water waste door hanger (Attachment 11) 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. 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 12.

9.1.6 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.

Table 9-2: School Education Programs

Grades	2016	2017	2018	2019	2020
1 st -6 th	900	1,000	1,000	1,100	0
Expenditures	\$1,200	\$1,200	\$1,200	\$800	\$0

Since 1990 over 26,850 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. Historically, 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.

In conjunction with the implementation of a full-AMI utility billing system, and the online billing portal being available to all registered residents, City staff has developed a new program to engage and educate students in water conservation. This program is designed to promote the use of the water conservation tools available on the online billing portal through problem-solving, water-use tracking and calculations based on actual residential consumption. The purpose of this program is two-fold. Primarily, engaging students in a “real-world” scenario which would utilize their problem-solving skills, mathematical skills, and imaginations is the goal. Secondly, because most of the students involved in this program would be residents of Lakewood, they would be using their own personal water-use data, which would spur their parents to sign up to the online portal and could have lasting water conservation effects on the City as a whole.

9.1.7 Commercial and Industrial Water Conservation Plans

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 6 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 \$1.08 per unit consumed and is exempt from the water conservation rate structure.

9.1.8 Commercial Water Conservation Rebate Programs

Commercial accounts that are within the City of Lakewood service area are eligible for water conservation rebates through the regional MWD/CBMWD conservation programs. The SoCal WaterSmart program offers cash rebates on a wide variety of water-saving technologies. Some examples of water-saving devices and equipment that are eligible for commercial rebates are connectionless food steamers and air-cooled ice machines, high-efficiency toilets and urinals, large high-efficiency rotary sprinkler nozzles, weather-based irrigation controllers and soil moisture sensor systems.

9.1.9 Water Conservation Coordinator

The Water Administration Manager is the member of the Department of Water Resources staff that 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. With the help of key department staff, the Water Administration Manager helps coordinate 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.

9.2 Reporting Implementation over the past five years

The City of Lakewood is committed to the water conservation effort and looks to improve on already existing conservation efforts as well as implement new methods to help reach our water conservation goal. Some of the DMMs implemented over the last five years are described below.

9.2.1 AMI Metering Data Monitoring

In 2018, the City implemented a full-AMI smart metering system encompassing the entire water system. Along with a full-AMI smart meter system came an online portal, where residents could pay their utility bills, access their daily water usage data, set leak parameters, and many other amenities included in this software suite. Recently, the City reached a significant milestone when Lakewood Online-Payment Portal registrations surpassed 50% registration of eligible water accounts. Current registration rate is now above 53% with over 10,850 accounts registered. The actual benefits of this system to residents are quantifiable, aiding them in conserving water by tracking their daily usage to stay within a specific parameter and alerting City staff if they feel their usage is abnormal, or their bill is too high.

9.2.2 Leak Alerts

City staff utilizes the full-AMI metering system to send out pro-active leak alerts to those residents whose accounts show possible leaks, allowing homeowners to fix leaks before large amounts of needless water usage is realized on their accounts and is wasted. With the City's previous system, proactive leak alerts

were impossible as meters were read on a bi-monthly basis and any leaks were found after the fact. City Staff also uses this system to track water usage of the over 200 City water accounts, allowing staff to tweak irrigation schedules, and more adequately manage their water usage on an account by account basis.

9.3 Planned Implementation to Achieve Water Use Targets

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. Furthermore, through the increased use of data from the City's full-AMI metering system, water conservation reporting and monitoring is more efficient and information more readily available to help City staff implement any water shortage contingency requirements in the future.

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 35 years over 45 miles of mains have been replaced.

Chapter 10: Plan Adoption, Submittal, and Implementation

10.1 Inclusion of all 2020 Data

This 2020 UWMP updates includes water use and planning data for the entire 2020 calendar year.

10.2 Notice of Public Hearing

10.2.1 Notice to Cities and Counties

As discussed in Section 2.1, The City of Lakewood coordinated the preparation the 2020 Urban Water Management Plan with Metropolitan Water District of Southern California (MWD), Central Basin Municipal Water District (CBMWD), City of Cerritos, City of Long Beach, Los Angeles County Sanitation District, Golden State Water Company (GSWC), and the Water Replenishment District of Southern California (WRD). The City notified these agencies at least sixty (60) days prior to the public hearing of the preparation of the 2020 Plan and invited them to participate in the development of the Plan. A copy of the notification letters sent to these agencies is provided in Attachment 13.

Table 10-1: Notification to Cities and Counties

City Name	60 Day Notice	Notice of Public Hearing
City of Cerritos	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
City of Long Beach	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
County Name	60 Day Notice	Notice of Public Hearing
Los Angeles County	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

10.2.2 Notice to the Public

The City notified the public of the UMWP and WSCP adoption hearing in the City’s utility bill insert, *Lakewood Briefs* in May and June, 2021 (Attachment 8). This insert is sent to all residents receiving a utility bill. The City also utilized the Lakewood Connect E-Magazine to inform the public of the UMWP and WSCP adoption hearing. Copies of the City’s newsletter and E-Magazine are provided in Attachments 8 and 10.

10.3 Public Hearing and Adoption

Prior to adopting the 2020 UWMP and WSCP, the City held a public hearing on June 22, 2021 which included input from the community regarding the City’s draft 2020 UWMP and WSCP. As part of the public hearing, the City provided information on the determination of its water use targets and action plan in case of severe water shortage conditions.

10.4 Plan Submittal

10.4.1 Submitting a UWMP and Water Shortage Contingency Plan to DWR

Within 30 days of adoption of the 2020 UWMP by the City Council and by July 1, 2021, the City will submit the adopted 2020 UWMP to DWR. The 2020 UWMP will be submitted through DWR’s “Water Use Efficiency (WUE) Data Online Submittal Tool” website.

10.4.2 Electronic Data Submittal

Within 30 days of adoption of the 2020 plan, the City will also submit all data tables associated with the 2020 Plan through DWR’s “Water Use Efficiency (WUE) Data Online Submittal Tool” website.

10.4.3 Submitting a UWMP, including WSCP, to the California State Library

Within 30 days of adoption of the 2020 plan, a copy (CD or hardcopy) of the 2020 plan will be submitted to the California State Library. A copy of the letter to the State Library will be maintained in the City’s file. The 2020 Plan will be mailed to the following address if sent by regular mail:

California State Library
Government Publications Section
PO Box 942837
Sacramento, CA 94237-0001
Attention: Coordinator, Urban Water Management Plans

The 2020 Plan will be mailed to the following address if sent by courier or overnight carrier:

California State Library
Government Publications Section
914 Capitol Mall
Sacramento, CA 95814

10.4.4 Submitting a UWMP to Cities and Counties

Within 30 days of adoption of the 2020 plan by the City Council, a copy of the 2020 UWMP will be submitted to the County of Los Angeles Registrar/Recorders office and City Hall. A copy of the letter to the County of Los Angeles will be maintained in the City’s file.

10.5 Public Availability

A copy of the adopted 2020 UWMP is available on the City’s website at www.lakewoodcity.org and at City Hall at 5050 Clark Ave, Lakewood between the hours of 7 AM and 5 PM Monday through Thursday.

10.6 Notification to Public Utilities Commission

This section is not applicable to the City

10.7 Amending an Adopted UWMP or Water Shortage Contingency Plan

10.7.1 Amending a UWMP

If the City amends the adopted 2020 UWMP, the amended UWMP will undergo adoption by the City’s governing board. Within 30 days of adoption, the amended UWMP will then be submitted to DWR, the State of California Library, the County of Los Angeles Registrar/Recorders office, and the City Hall.

10.7.2 Amending a WSCP

If the City amends the adopted 2020 WSCP, the amended WSCP will undergo adoption by the City’s governing board. Within 30 days of adoption, the amended UWMP will then be submitted to DWR, the State of California Library, the County of Los Angeles Registrar/Recorders office, and the City Hall.

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