CITY OF SIGNAL HILL

2020 URBAN WATER MANAGEMENT PLAN

Submitted to

CITY OF SIGNAL HILL
2175 Cherry Avenue
Signal Hill, California 90755

Submitted by

AKM CONSULTING ENGINEERS
553 Wald
Irvine, California 92618

December 2021

TABLE OF CONTENTS

LIST OF APPENDICES

Appendix

LIST OF FIGURES

LIST OF TABLES

References

[AP, 2015] Aquarium of the Pacific, *City of Long Beach Climate Resiliency Assessment Report Appendices,* December 2015

[CA, 2013] Superior Court of the State of California for the County of Los Angeles, *Case No. 786,656 Third Amended Judgment (Declaring and establishing water rights in Central Basin),* December 2013

[CBMWD, 2016] Central Basin Municipal Water District, *2015 Urban Water Management Plan*, June 2016

[GWMA, 2016] Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority, *Summary of "Baseline and Compliance Urban Per Capita Water Use" Determination*, 2016

[GWMA, 2011] Los Angeles Gateway Region Integrated Regional Water Management Authority, *Gateway Regional Water Conservation Alliance Report,* June 2011

[IRWMR, 2013] Leadership Committee of the Greater Los Angeles County Integrated Regional Water Management Region, *Greater Los Angeles County Integrated Regional Water Management Plan*, 2013

[LBWD, 2017] *Agreement WD-3302*, October 1, 2017

[MWD, 1999] Metropolitan Water District, *Water Supply Drought Management Plan*, August 1999

[MWD, 2014] Metropolitan Water District, *Water Supply Allocation Plan,* December 2014

[MWD, 2016] Metropolitan Water District, *2015 Urban Water Management Plan*, June 2016

[RFC, 2016] Raftelis Financial Consultants, *Water Financial Plan Report*, March 2016

[SH, 2011] City of Signal Hill, *Resolution No. 2011-06-5895 (Establishing Regional Alliance to Comply with SB X7-7)*, June 2011

[SH, 2014] City of Signal Hill, *Update on the Central Basin Water Storage Plan (Agenda Item),* January 2014

[SH, 2017] City of Signal Hill, *Emergency Potable Water Procurement & Distribution,* August 2017

[WRD, 2016] Water Replenishment District of Southern California, *Groundwater Basins Master Plan*, September 2016, prepared by CH2M Hill and RMC

[WRD, 2020] Water Replenishment District of Southern California, *Watermaster Service in the Central Basin – Los Angeles County (July 1, 2019 – June 30, 2020),* November 2020, prepared by the Administrative Body

[WRD, 2021] Water Replenishment District of Southern California, *Regional Groundwater Monitoring Report Water Year 2019-2020 for Central and West Coast Basins*, March 2021, prepared by WRD

SECTION 1

INTRODUCTION

1-1 Background and Purpose

The Urban Water Management Planning Act was originally passed in 1983 and became effective on January 1, 1984. The Act requires that urban water suppliers submit an Urban Water Management Plan (UWMP) to the State of California (State) once approximately every five (5) years. California Water Code (CWC) §10610 through §10657 details the information that must be included in the UWMP as well as who must file them.

A water agency is defined as an "urban water supplier", either publicly or privately owned, if it provides water for municipal purposes either directly or indirectly to more than 3,000 end users or supplies more than 3,000 acre-feet of potable water annually. The City of Signal Hill (City) is considered an urban "retail" water supplier, as the City provides water to over 3,000 retail customers.

The UWMP provides a framework for long term water planning and informs the public of a supplier's plans for long-term resource planning that ensures adequate water supplies for existing and future demands. The UWMP should address and evaluate these water-planning fundamentals:

- Current and future water use;
- Potable and non-potable water supplies;
- Water supply sources;
- Water supply reliability;
- Drought Risk Assessment (DRA);
- Water Shortage Contingency Plan (WSCP)

Senate Bill X7-7 (SB X7-7), the Water Conservation Act of 2009 was signed into law in November 2009. This legislation required urban retail water suppliers to set Urban Water Use Targets for 2015 and 2020 so that a 20 percent statewide reduction in urban per capita water use could be met by 2020. Urban retail water suppliers are required to develop their water use targets and submit an Urban Water Management Plan in order to qualify for state grants and loans.

There were numerous additional requirements passed by the Legislature for the 2020 UWMPs. The major new requirements are as follows:

1. **Five Consecutive Dry-Year Water Reliability Assessment** – analyze the reliability of water supplies to meet water use over an extended drought period

2. **Drought Risk Assessment** – assess water supply reliability over a five-year period from 2021 to 2025

3. **Seismic Risk** – address seismic risk to various water system facilities and provide a mitigation plan

4. **Energy Use Information** – include readily obtainable information on estimated amounts of energy for water supply extraction, treatment, distribution, storage, conveyance, and other water uses.

5. **Water Loss Reporting for Five Years** – include the past five years of water loss audit reports

6. **Water Shortage Contingency Plan** – include a water shortage contingency plan with specific elements

7. **Groundwater Supplies Coordination – consistency with Groundwater Sustainability Plans (GSP) if available**

8. **Lay Description** – include a lay description of the fundamental determinations of the UWMP, especially regarding water service reliability, challenges ahead, and strategies for managing reliability risks

A copy of the 2020 UWMP Checklist can be found in Appendix 1-1.

1-2 Regional Planning

According to §10608.20(a)(1) and 10608.28 of the California Water Code, urban retail water suppliers may plan, comply, and report their baseline daily per capita water use, 2015 interim, and 2020 urban water use targets on a regional basis, an individual basis or both.

The City of Signal Hill (City) is a member of the Los Angeles Gateway Integrated Water Management Authority (GWMA) which developed and keeps up to date a detailed integrated regional water management plan (IRWMP). The goal of the IRWMP is to address the water resources needs of the Greater Los Angeles Region in an integrated and collaborative manner to:

- improve water supplies,
- enhance water supply reliability,
- improve surface water quality,
- preserve flood protection,
- conserve habitat, and
- expand recreational access.

The GWMA is a joint powers authority (JPA) under California law. There are currently 19 entities signatory to the JPA.

The Gateway Regional Alliance (GRA) was formed in 2011 by 15 of the agencies within the Greater Los Angeles Region to comply with the reporting requirements of SB X7-7 on a regional basis. If the GRA meets its regional target, then all suppliers in the alliance will be deemed compliant. If the GRA fails to meet its regional target, water suppliers in the alliance that meet their individual targets will be deemed compliant. Water suppliers in alliances that meet neither their individual target nor their regional target will be deemed non-compliant.

The goal of the GRA is to provide flexibility for the cities and water agencies within the Greater Los Angeles Region to comply with the requirements of SB X7-7, as well as allowing the participating agencies to take a regional approach to water conservation and encourage further cooperation between participating agencies.

Per GWMA's "Summary of Baseline and Compliance Urban per Capita Water Use Determination" report dated June 2016, the City's weighted 2020 Urban Water Use Target is 151 gallons per capita per day (gpcd). The GRA 2020 Urban Water Use Target is 111 gpcd.

1-3 Lay Description

Water service reliability is dependent on having enough high quality water supplies to meet future demands. Details of future water demands and available water supplies are described in this 2020 UWMP.

The City's service area is not expected to experience large increases in additional residences or population. The water demands have remained relatively constant over the past five years since the permanent water conservation measures became well established in the service area.

The City's water supply sources include groundwater, imported water, and recycled water. In 2020, the City's potable water supply was 97 percent groundwater and 3 percent imported water. Imported water is typically utilized to meet the peak demands during the warm summer months. The City plans to remain primarily reliant on groundwater into the future with the imported water supply connection serving only used to meet the peak demands or as an emergency supply source.

Replenishment of Central Basin is also solely reliant on local sources: recycled water and local runoff. The Water Replenishment District (WRD) publishes an annual Regional Groundwater Monitoring Report for the Central and West Coast Basins. Per the 2019-2020 report, the groundwater quality in Central Basin is generally of "good quality and is suitable for use by the pumpers in the District, the stakeholders, and the public. Groundwater from localized areas with marginal to poor water quality can still be utilized but may require treatment prior to being used as a potable source". Due to the quality of the groundwater in the basin, minimal water treatment occurs prior to entering the potable water system. The City disinfects the groundwater by means of chloramination to promote greater ease of blending with the imported water, which is chloraminated as well. Groundwater quality is not expected to be a constraint on groundwater as a source of water in the future.

Based on analysis of historical rainfall data and associated demands, the City anticipates that there will be a surplus of supply during all average, single dry years, and multiple dry years (up to 5 years) that may occur in the future. No drastic action is expected to be needed as long as typical water supplies are available.

The drought risk assessment (DRA) is an evaluation that assumes the occurrence of a drought over a 5 year time period. Climate change may not significantly reduce supply in Central Basin, but demands in the Greater Los Angeles County (GLAC) Region are predicted to increase due to increased temperatures, especially because potable water is still used for irrigation purposes. This in turn could place a larger demand on the groundwater supplies that are available. In order to account for this possibility, the City conservatively conducted the assessment as if only the amount of groundwater rights was available and there was no carryover included in the City's total available groundwater supply.

The City's groundwater right of 2,022 AFY is in the Central Basin Aquifer. The City's existing potable water demand is currently 1,918 AFY. Therefore, even under the condition of not being able to access groundwater carryover rights, the City is expected to have enough supply to meet the demands during the drought years.

SECTION 2

PLAN PREPARATION

2-1 Basis for Preparing Plan

The City of Signal Hill's (City) 2020 Urban Water Management Plan (UWMP) has been prepared to conform to California Water Code (CWC) Division 6, Part 2.6: Urban Water Management Planning. CWC §10610 through §10657, known as the Urban Water Management Planning Act (Act).

Originally enacted in 1983, the Act requires that every urban water supplier (providing water for municipal purposes to more than 3,000 end users or supplying more than 3,000 acre-feet of water annually) prepare and adopt an UWMP. The Act requires urban water suppliers to prepare plans that describe and evaluate reasonable and practical efficient water uses, recycling and conservation activities. These plans are to be filed with the California Department of Water Resources (DWR) every five years.

2-2 Public Water System and Plan Identification

The City meets the reporting threshold of 3,000 or more end users or 3,000 acre-feet (AF) of water supplied. As shown in Table 2-1, the City delivered 1,918 AF of water to 3,123 municipal connections in 2020. Table 2-2 documents the City's choice to prepare an individual plan for its 2020 UWMP.

Table 2-1
Public Water System

Submittal Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020 *
1910149	City of Signal Hill, Water Department	3,123	1,918
	TOTAL	3,123	1,918
* ***Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*			
NOTES:			

Table 2-2
Plan Identification

Submittal Table 2-2: Plan Identification			
	Type of Plan		Name of RUWMP or Regional Alliance
☑	Individual UWMP		
	☐	Water Supplier is also a member of a RUWMP	
	☑	Water Supplier is also a member of a Regional Alliance	Gateway Regional Alliance
☐	Regional Urban Water Management Plan (RUWMP)		
NOTES:			

The City became a member of the Gateway Regional Alliance (GRA) in 2011 in order to comply with reporting requirements of SB X7-7 on a regional basis. This regional alliance is still in effect for the 2020 UWMP submittals. Additional information on SB X7-7 and regional compliance can be found in Section 1.

2-3 Reporting Year and Units of Measure

All of the City's water demand and supply data in this document is reported in calendar years and the units of measure are in acre-feet (Table 2-3).

Table 2-3
Supplier Identification

Submittal Table 2-3: Supplier Identification	
Type of Supplier (select one or both)	
☐	Supplier is a wholesaler
☑	Supplier is a retailer
Fiscal or Calendar Year (select one)	
☑	UWMP Tables are in calendar years
☐	UWMP Tables are in fiscal years
Units of measure used in UWMP *	
Unit	AF
**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*	
NOTES:	

2-4 Coordination with Wholesale Agencies

Central Basin Municipal Water District (CBMWD) is the City's wholesale water supplier as shown in Table 2-4.

Table 2-4
Water Supplier Information Exchange

Submittal Table 2-4 Retail: 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.
Wholesale Water Supplier Name
Central Basin Municipal Water District (CBMWD)
NOTES:

2-5 Coordination with Other Agencies

The City notified the agencies listed in Section 10, Table 10-2 that the 2020 UWMP was being prepared. The agencies included the Central Basin Municipal Water District (CBMWD), Water Replenishment District (WRD) and the Long Beach Water Department (LBWD). As required by California Water Code (CWC) §10621, these notifications were sent out more than 60 days before the public hearing for the 2020 UWMP.

SECTION 3

SYSTEM DESCRIPTION

3-1 General Description

The City of Signal Hill (City) is located in Los Angeles County, California. It is approximately 3 miles north of the Port of Long Beach and 22 miles south of downtown Los Angeles. The City covers approximately 2.2 square miles and is surrounded by the City of Long Beach as shown on Figure 3-1. The City is accessible from the San Diego Freeway (I-405), located to the immediate north. The main roads providing access into the City include Cherry Avenue and Pacific Coast Highway. The City's water service area coincides with the City boundary.

3-2 Geology

The City is located in Los Angeles County, which is considered in a youthful state of geologic evolution and is unstable. Many active and potentially active earthquake faults are found throughout the county. Liquefaction, land sliding, shattered ridges, land settlement, tsunamis and seiches are other potential seismic-related hazards that could occur in the region. The City is close in proximity to the Newport-Inglewood Fault, which was responsible for the 1933 Long Beach earthquake that registered 8.3 on the Richter scale. The Newport-Inglewood Fault is a normal fault with a strike slip fault component. Several other potentially active faults in the area are the Cherry Hill Fault, the Dickler Fault, the Northeast Flank Fault, and the Reservoir Hill Fault. (*Ref: Environmental Resources Element of General Plan*).

3-3 Topography and Elevations

The elevations within the service area vary from 25 feet above sea level in the southwestern portion of the City to 370 feet above sea level at the hilltop plateau. Slopes vary from 10 to 80 percent. The slopes are often not uniform due to the fact that cuts were made in roads and pads to provide road access to service the oil equipment and developments. There are steep slopes that terminate in a flat terrace shape. The greatest percentage of slope change occurs on the southerly slopes of the Hill with an average of 40 percent slope and increasing to as much as 80 percent slope (*Ref: Environmental Resources Element of General Plan*).

3-4 Soils

The City is located in the Los Angeles Coastal Plain, which sits on an extraordinarily deep marine and nonmarine sedimentary base. The soils in the City are primarily composed of weathered alluvium and are classified as silts and sands (*Ref: Environmental Resources Element of General Plan*).

3-5 Land Use

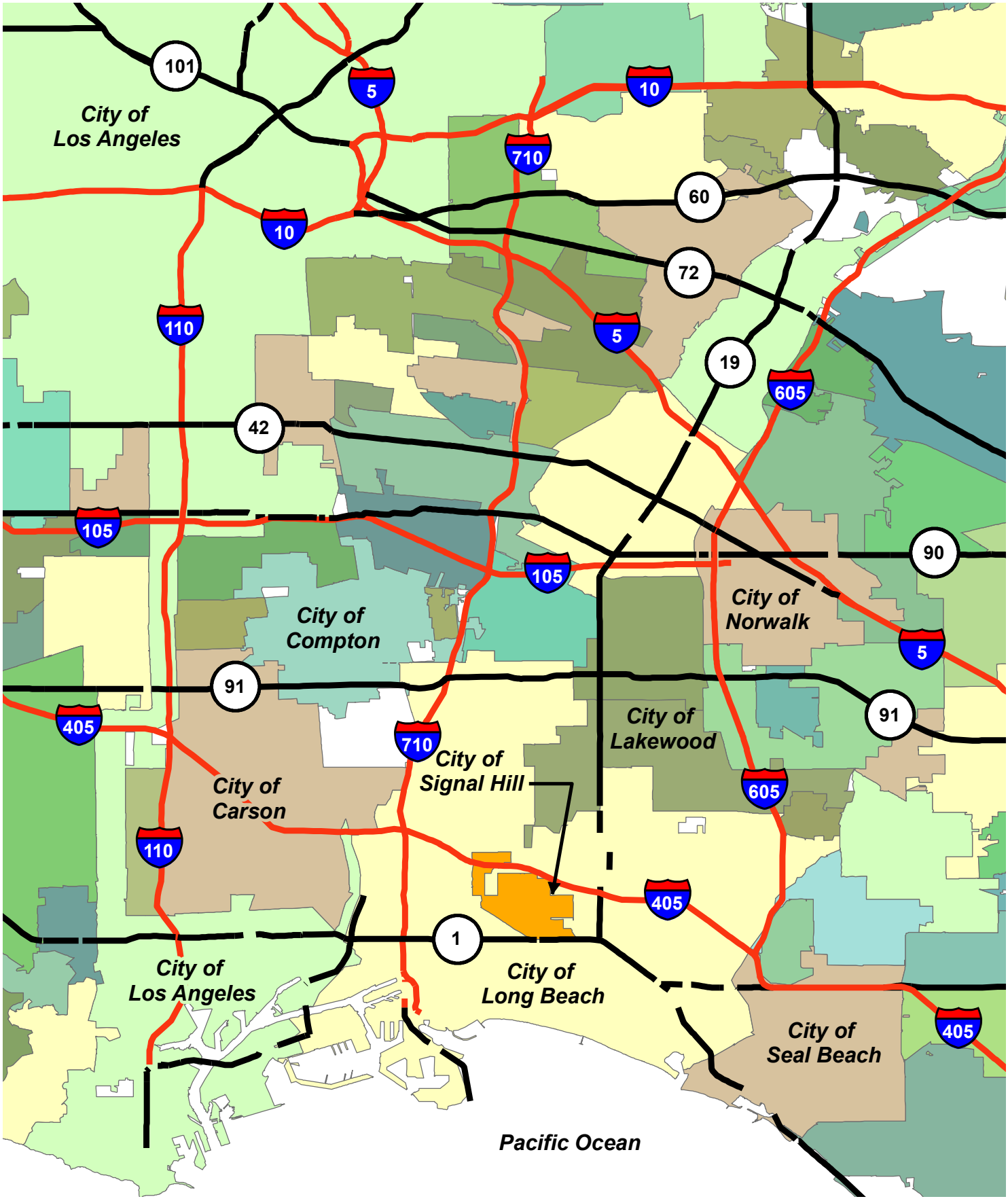
The existing City land use is shown on Figure 3-2 and the distribution is shown in Table 3-1, per the City's latest GIS land use information. Within the City, the primary land uses are residential (290 ac or 21%), industrial (288 ac or 21%) and commercial/services (174 ac or 12%). Approximately 204 acres or 15 percent of the total is currently vacant or undeveloped. The City's future land uses are shown on Figure 3-3 and in Table 3-2.

Table 3-1
Existing Land Use

Land Use	Net Acres	Percent of Total
Single Family Residential	124.1	8.9%
Multi-Family Residential	165.8	11.9%
General Office	27.8	2.0%
Commercial and Services	140.7	10.1%
Mixed Commercial and Industrial	5.7	0.4%
Mixed Residential and Commercial	0.6	0.0%
Industrial	288.1	20.7%
Facilities	15.2	1.1%
Education	34.8	2.5%
Open Space and Recreation	31	2.2%
Transportation, Communications and Utilities	35.6	2.6%
Under Construction	2.1	0.2%
Vacant	204.5	14.7%
Right-of-Way	314	22.6%
Total	**1,390**	**100.0%**

Table 3-2
Future Land Use

Land Use	Density (du/ac)	Gross Acres	Percent of Total
Low Density Residential	<10	350	25.2%
Medium Density Residential	10-20	68	4.9%
High Density Residential	21-35	84	6.0%
Town Center		87	6.3%
Commercial General		179	12.9%
Commercial Office		25	1.8%
Commercial Industrial		151	10.9%
Light Industrial		195	14.0%
General Industrial		192	13.8%
Public Institutional		35	2.5%
Open Space		24	1.7%
Total		**1,390**	**100%**

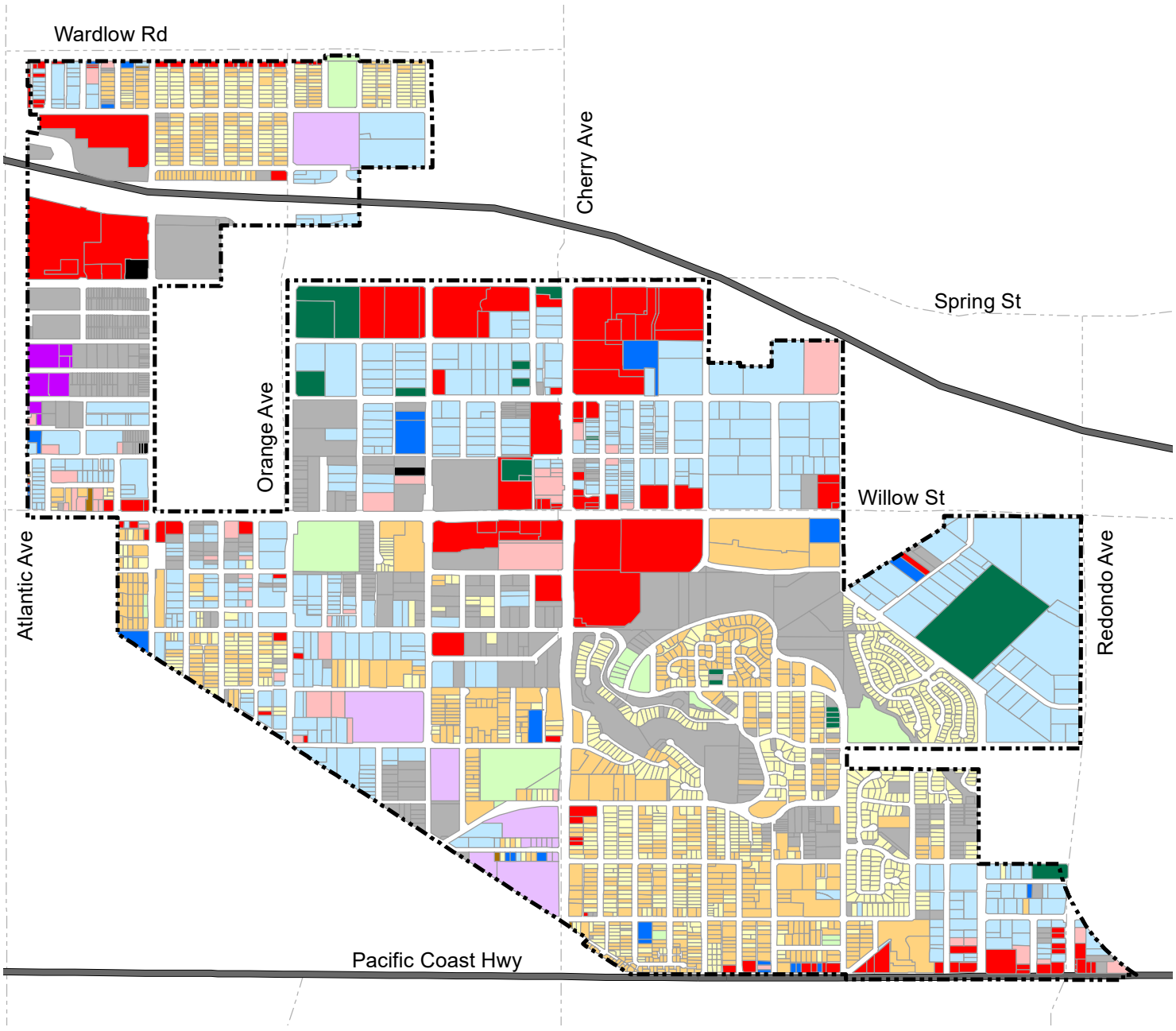


CITY OF SIGNAL HILL
URBAN WATER MANAGEMENT PLAN

Regional Location Map

DATE: September 2021

Figure 3-1



N

0 875 1,750 3,500 Feet

CITY OF SIGNAL HILL
URBAN WATER MANAGEMENT PLAN

Existing Land Use

DATE: September 2021

Figure 3-2

SYMBOL	LAND USE DISTRICT	DWELLING UNITS/ ACRE
1.1	LOW DENSITY RESIDENTIAL	<10
1.2	MEDIUM DENSITY RESIDENTIAL	10-20
1.3	HIGH DENSITY RESIDENTIAL	20-35
1.4	VERY HIGH DENSITY RESIDENTIAL	35-45
3.1	TOWN CENTER	
3.2	COMMERCIAL GENERAL	
3.3	COMMERCIAL OFFICE	
3.4	COMMERCIAL INDUSTRIAL	
4.1	LIGHT INDUSTRIAL	
4.2	GENERAL INDUSTRIAL	
PI 4.1	PUBLIC INSTITUTIONAL	
OS	OPEN SPACE (PARK/TRAIL)	

KEY LAND USE CHANGES

Recommended in this Update of the Land Use Element

1. Establish Central Business District (CBD)
2. Establish Crescent Heights Historic District
3. Change Atlantic / Spring zoning from CG & CO to CG & GI
4. Change Cherry Avenue zoning from CR to R

GENERALIZED LAND USE MAP
FIGURE 3 OF CITY'S LAND USE ELEMENT
REVISED 1/24/12

N

Not to scale

CITY OF SIGNAL HILL
URBAN WATER MANAGEMENT PLAN

Future Land Use

DATE: September 2021

Figure 3-3

3-6 Climate

The City's service area typically experiences a Mediterranean climate with warm, dry summers and mild winters. It lies in the heart of Southern California's coastal plain where it benefits from cool ocean breezes and the marine cloud layer, keeping the average maximum temperature about 83.9°F. Average annual precipitation for the area has historically been about 12.0 inches, with most precipitation occurring between the months of November to April. Table 3-3 provides information on average minimum and average maximum temperatures, average precipitation, and average evapotranspiration (ETo) for the City's service area using data from the Western Regional Climate Center Long Beach Daugherty Fld Station and the California Irrigation Management Information System (CIMIS) Long Beach Station. The average temperature is projected to increase by approximately 2.3-2.7 °F by 2050 (City of Long Beach Climate Resiliency Assessment Report, 2015).

Table 3-3
Service Area Climate

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max Temp (F°)[1]	67.1	67.2	68.4	71.7	73.5	76.9	82.2	83.9	82.3	77.9	72.2	67.0	74.2
Average Min Temp (F°)[1]	45.6	47.3	49.7	52.4	56.8	60.3	63.7	64.9	62.9	57.9	50.5	45.3	54.8
Average Total Precipitation (in)[1]	2.63	2.90	1.83	0.70	0.20	0.06	0.02	0.06	0.19	0.42	1.21	1.80	12.01
Average Eto (in)[2]	2.34	2.94	3.34	4.06	5.96	5.26	6.62	6.31	4.66	3.51	2.44	2.22	49.66

[1]Western Regional Climate Center - Long Beach Daugherty Fld, California Station (045085) Period of Record 1/1/49 to 6/9/16

[2]California Irrigation Management Information System, 2020, Station ID: 174, Station Name: Long Beach

More recent rainfall data collected by the Los Angeles County Department of Public Works (LACPW) is shown in Table 3-4. The annual amount of rainfall varies dramatically from year to year. The average rainfall from 1996 to 2019 was 11.32 inches, ranging from 3.35 inches to 29.01 inches per year. The driest year in the last 20 years occurred in 2006-2007, when only 3.35 inches of rainfall was recorded. The driest five years in the last 20 years was from 2011-2012 to 2015-2016. The state of California declared a Drought State of Emergency on January 17, 2014. The drought was declared at an end on April 7, 2017 after the driest four year period on record.

Table 3-4
Historical Rainfall

Water Year (Oct. 1-Sept. 30)	Signal Hill City Hall (415)[1] @ 140'	Long Beach Airport (662D)[1] @ 34'	LB Reclamation Plant (1254)[1] @ 20'	Average Annual Precipitation (inches)	Comment
1996-1997	13.60	14.13	14.00	13.60	Used Station 415
1997-1998	29.01	29.21	25.59	29.01	Used Station 415
1998-1999	8.22	8.54	8.91	8.22	Used Station 415
1999-2000	0.00	6.53	7.88	7.21	Used Station 415
2000-2001	13.15	10.90	15.67	13.15	Used Station 415
2001-2002	3.44	2.21	4.08	3.44	Used Station 415
2002-2003	-	-	15.33	15.33	Used Station 1254
2003-2004	-	-	6.69	6.69	Used Station 1254
2004-2005	-	-	28.00	28.00	Used Station 1254
2005-2006	-	-	9.28	9.28	Used Station 1254
2006-2007	-	2.58	4.11	3.35	Single dry year
2007-2008	-	10.90	10.21	10.56	Closest to average
2008-2009	-	9.44	9.54	9.49	
2009-2010	-	15.66	15.22	15.44	
2010-2011	-	18.80	18.50	18.65	
2011-2012	-	7.59	7.70	7.65	Multiple dry year
2012-2013	-	6.69	6.59	6.64	Multiple dry year
2013-2014	-	4.62	0.00	4.62	Multiple dry year
2014-2015	-	9.35	9.53	9.44	Multiple dry year
2015-2016	-	4.99	6.31	5.65	Multiple dry year
2016-2017	-	20.10	20.14	20.12	
2017-2018	-	3.53	3.48	3.51	
2018-2019		17.63	17.83	17.73	
Minimum	**0.00**	**2.21**	**0.00**	**3.35**	
Average	**11.24**	**10.32**	**11.50**	**11.32**	
Maximum	**29.01**	**29.21**	**28.00**	**29.01**	

[1]Los Angeles County of Department Public Works ALERT Rainfall Station ID

3-7 Population

Since its incorporation in 1924, the City has grown from a population of 2,932 to approximately 11,712 in 2020 (*Ref: California Department of Finance, Table E-5*). The projected future population estimates were developed by the Southern California Association of Governments (SCAG) in their 2016-2040 RTP/SCS Final Growth Forecast. The forecast predicts an increase of 500 persons between 2020 and 2035 and an increase of 200 persons between 2035 and 2040. The City's 2020 population and projected population are shown in Table 3-5.

Table 3-5
Population – Current and Projected

Submittal Table 3-1 Retail: Population - Current and Projected					
Population Served	2020	2025	2030	2035	2040
	11,712	11,879	12,045	12,212	12,412
NOTES: Southern California Association of Governments 2016-2040 RTP/SCS Final Grouth Forecast predicted growth of 500 persons between 2020 and 2035 and 200 additional persons between 2035 and 2040. The growth estimates were utilized to calculate the total population for 2035 and 2040. Population for 2025 and 2040 were interpolated.					

In 2020, the City had approximately 4,631 housing units and a 5.0 percent vacancy rate, resulting in 2.65 persons per household.

Summary of Quantified Housing Objectives

Per the City's 2013-2021 Housing Element, the City established quantified housing objectives by income group for the 2013-2021 planning period, shown in Table 3-6. The extremely low construction objective is based on development of 72 affordable housing units at 1500 Hill Street and 6 second units. The moderate and above moderate construction objective is based on build out of approved projects, development of a vacant site, and second units. The rehabilitation objective is based on the number of homes that can be rehabilitated with non-City funds. The conservation objective includes the rental assistance provided by the Housing Authority of The County of Los Angeles.

Table 3-6
Quantified Housing Objectives: 2013-2021

Category	Extremely Low	Very Low	Low	Moderate	Above Moderate	Total
Construction	24	24	30	35	88	**201**
Rehabilitation	5	5	10	0	0	**20**
Conservation	30	15	10	0	0	**55**
Preservation*	-	-	-	-	-	**-**

*None of the City's affordable housing stock is at risk of conversion to market rate housing during the 2013-2021 planning period

3-8 Other Social, Economic, and Demographic Factors

The City's service area does not have significant non-residential populations, such as seasonal populations, that fluctuate based on vacation, agricultural, institutional, or commercial economies. There is not a significant student housing population in the service area and no agriculture occurs in the area. The majority of the population are permanent residents in single family and multifamily homes. Therefore, no adjustments for non-residential populations were incorporated into the population estimates.

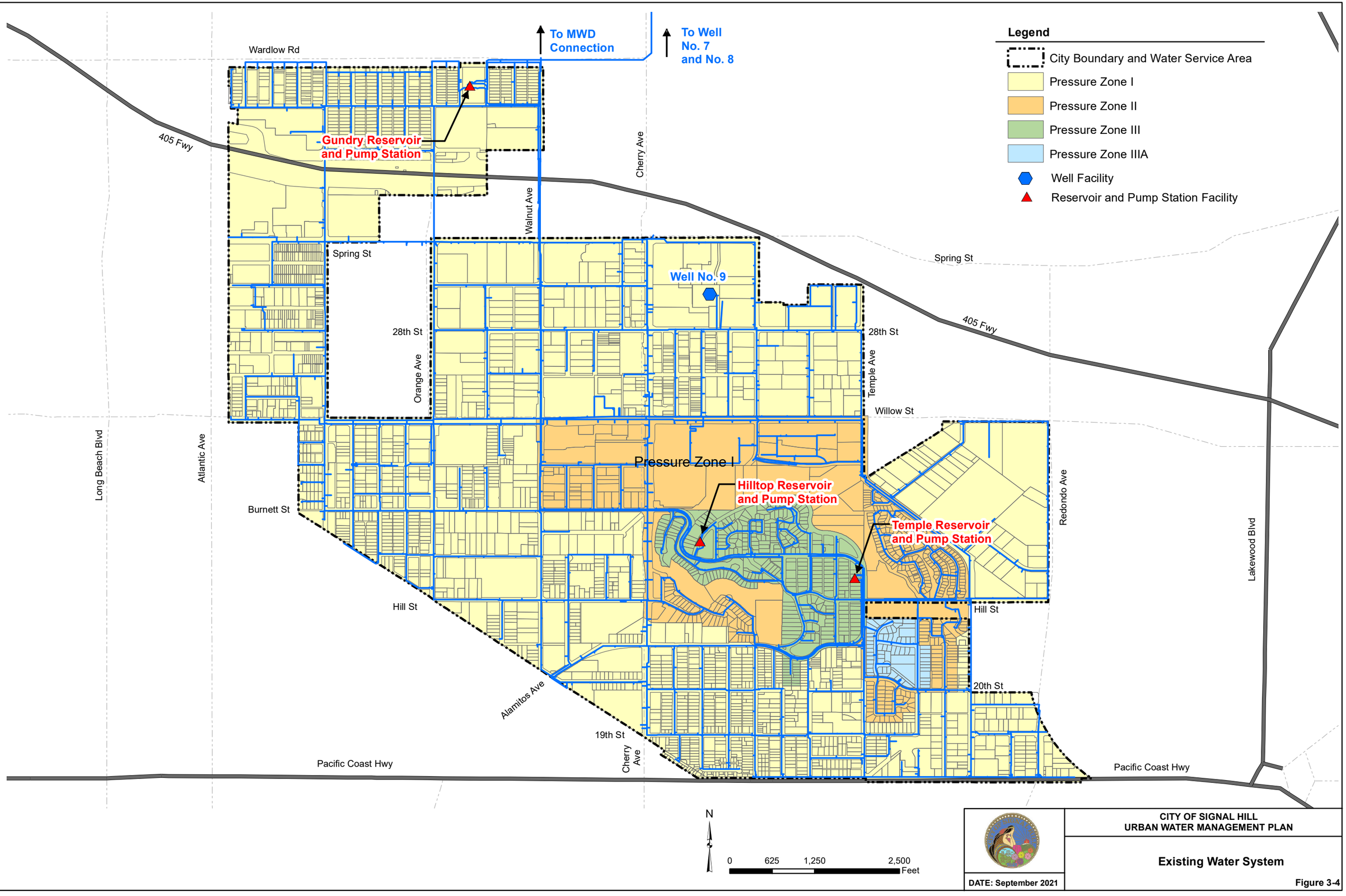
Based on the fact that the service area is essentially built out and there are minimal areas of redevelopment, a large increase in population and/or water use is not expected in the future.

3-9 Potable Water System

The City's potable water service area lies completely within the City of Signal Hill as shown on Figure 3-4. The water system consists of four pressure zones (Zone I, II, III, and IIIA). Zone IIIA is served water through a pressure regulating station. The water system consists of the following facilities:

- 50 miles of pipe, 4-inches to 20-inches in diameter
- 3 Storage Reservoirs (Gundry, Temple, Hilltop) with a total capacity of 7.3 MG
- 3 Wells (Well No. 7, 8, and 9) with a total capacity of 3,585 gpm
- 3 Booster Pump Stations (Gundry, Temple, Hilltop)
- 2 Pressure Regulating Stations (Walnut and Zone 3A)
- 1 Imported Water Connection (CB-19), maximum capacity of 7.5 cfs or 3,366 gpm
- 2 Groundwater Treatment Facilities
- 2 Emergency Interconnections (Lakewood and Long Beach Water Department)

The City of Signal Hill Water Department operates a system with four (4) pressure zones that distributes water to customers throughout the City of Signal Hill limits. The City limits and City water service area are approximately the same. Primary sources of water to the City are imported water from Metropolitan Water District of Southern California (MWD) and groundwater pumped from Central Groundwater Basin, through City owned and operated Well No. 7, Well No. 8, and Well No. 9. The City utilizes chloramination to treat water supplies. Water from Well No. 7 and Well No. 8 is treated and then enters the system through the Gundry Reservoir, which acts as a forebay to the rest of the system. Well No. 9 water is treated at the site by passing through a 3-stage nano-filtration system followed by a liquid granular activated carbon (LGAC) treatment. Then the water is pumped directly into the system from a clearwell. Imported water enters the system through a pressure regulating station and directly serves Zone 1 of the system. There are two other storage reservoirs, namely Temple Reservoir and Hilltop Reservoir. Water is conveyed through approximately 50 miles of transmission and distribution pipeline to 3,123 customers.



CITY OF SIGNAL HILL
URBAN WATER MANAGEMENT PLAN

Existing Water System

DATE: September 2021

Figure 3-4

SECTION 4

WATER USE CHARACTERIZATION

4-1 General

This section describes the existing and projected water use in the City of Signal Hill. In 2020, the City served 10 AF or less than 0.5% of its demand with recycled water. Reservoir Park, located in the northwest corner of the City, is the only existing recycled water customer. Recycled water is provided via the Long Beach Water Department's (LBWD) recycled water system. The remainder of the City is provided potable water through its potable water system, which is supplied water primarily through groundwater wells drawing from the Central Basin aquifer. The City does also have a connection with Metropolitan Water District (MWD) that is used to supplement the groundwater supply.

4-2 Historical Production and Purchase Data

The historical production and purchase data is provided in Table 4-1. Total production and purchase averaged about 2,106 AFY from 2000 to 2020. Despite the increase in population, the production and purchase amount has declined by about 14 percent since 2013. This can largely be attributed to the implementation of water conservation efforts by the City and the public.

The water use per person has declined from 216 gallons per capita per day (gpcd) to 146 gpcd in 2020.

4-3 Current Potable Water Demands

In 2020, the City's total water demands per billing data was 1,735 AF. The potable water demands by customer class are shown in Table 4-2.

The 2020 production and purchase total was 1,918 AF, therefore the losses are calculated to be 183 AF. Of the total water loss in 2020, 58 AF is due to the flushing/operations of Well 9 and its treatment plant. Another 53 AF is due to the flushing/operations of Well 7 and the Gundry treatment plant.

Table 4-1
Historical Production and Purchase Data

Calendar Year	Groundwater (AF)	Imported Water (AF)	Production & Purchase (AF)	Population	Water Use (gpcd)[3]
2000	1,991	270	2,261	9,333 [1]	216
2001	2,010	182	2,192	9,572 [1]	204
2002	2,127	155	2,282	9,819 [1]	208
2003	1,998	329	2,327	10,111 [1]	206
2004	2,045	392	2,437	10,397 [1]	209
2005	1,309	1,026	2,334	10,614 [1]	196
2006	5	2,286	2,291	10,741 [1]	190
2007	1,939	399	2,338	10,786 [1]	194
2008	2,033	96	2,129	10,955 [1]	174
2009	2,021	26	2,047	10,988 [1]	166
2010	1,295	634	1,929	11,016 [1]	156
2011	1,862	178	2,041	11,097 [2]	164
2012	2,147	31	2,178	11,214 [2]	173
2013	2,067	161	2,228	11,304 [2]	176
2014	1,356	754	2,110	11,462 [2]	164
2015	1,754	91	1,845	11,597 [2]	142
2016	1,789	0	1,789	11,590 [2]	138
2017	1,222	593	1,815	11,757 [2]	138
2018	1,830	11	1,841	11,733 [2]	140
2019	1,899	3	1,902	11,744 [2]	145
2020	1,860	57	1,918	11,712 [2]	146
Average	**1,741**	**365**	**2,106**	**10,931**	**174**

[1]California Department of Finance Table E-8 Historical Population and Housing Estimates, 2000-2010 Report, by year

[2]California Department of Finance 2020 Table E-5 City/County population and Housing Estimates

[3]Includes water losses

Table 4-2
Demands for Potable and Non-Potable Water – Actual

Submittal Table 4-1 Retail: Demands for Potable and Non-Potable[1] Water - Actual			
Use Type	2020 Actual		
	Additional Description	Level of Treatment When Delivered	Volume[2]
Single Family		Drinking Water	393.9
Multi-Family		Drinking Water	520.6
Commercial		Drinking Water	403.2
Industrial		Drinking Water	132.8
Institutional/Governmental		Drinking Water	51.7
Landscape		Drinking Water	215.5
Other	Fire Service	Drinking Water	0.0
Other	Temp Meter	Drinking Water	17.6
Losses		Drinking Water	183
		TOTAL	1,918
[1] *Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4.*			
[2] *Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.*			
NOTES: Water loss for 2020 was calculated by subtracting the total water billed from the total water production and purchase.			

4-4 Projected Potable and Recycled Water Demands

Potable water demands are projected to be 2,034 AF in 2040 as shown in Table 4-3. The projected potable water demands were determined based upon 146 gallons per capita per day (gpcd) and the projected population of the future year. The 146 gpcd is what the water use per person was in 2020 (1,918 AFY / 11,712 persons).

Table 4-3
Use for Potable and Non-Potable Water – Projected

Submittal Table 4-2 Retail: Use for Potable and Non-Potable[1] Water - Projected					
Use Type	Additional Description	Projected Water Use[2] *Report To the Extent that Records are Available*			
		2025	2030	2035	2040
Single Family		394	394	394	394
Multi-Family		548	575	602	635
Commercial		403	403	403	403
Industrial		133	133	133	133
Institutional/Governmental		52	52	52	52
Landscape		216	216	216	216
Other	Temp Meter	18	18	18	18
Losses		183	183	183	183
	TOTAL	**1,947**	**1,974**	**2,001**	**2,034**
[1] *Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4.*					
[2] *Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.*					
NOTES: It is assumed that only the multi-family population and water use will increase in the future. Water loss is estimated to be about the same as 2020 for future years. The 2020 water loss was assumed for future years.					

Recycled water demands are projected to remain constant as shown in Table 4-4.

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

Submittal Table 4-3 Retail: Total Water Use (Potable and Non-Potable)					
	2020	2025	2030	2035	2040
Potable Water, Raw, Other Non-potable	1,918	1,947	1,974	2,001	2,034
Recycled Water Demand[1]	10	10	10	10	10
TOTAL WATER USE	1,928	1,957	1,984	2,011	2,044
[1] *Recycled water demand fields will be blank until Table 6-4 is complete*					
NOTES:					

4-5 Distribution System Losses

Water suppliers are required to quantify their distribution system losses using the American Water Works Association method. The physical water losses from the water distribution system and the supplier's storage facilities, up to the point of customer consumption are defined as real losses. Apparent losses include unauthorized consumption, customer metering inaccuracies, and systematic data handling errors. The total water loss is a combination of real losses and apparent losses.

The City's water loss from 2017 through 2019 is shown in Table 4-5.

Table 4-5
Last Five Years of Water Loss Audit Reporting

Submittal Table 4-4 Retail: Last Five Years of Water Loss Audit Reporting	
Reporting Period Start Date	**Volume of Water Loss [1,2]**
07/2019	64
07/2018	48
07/2017	146
07/2016	Not Available
07/2015	Not Available
[1] *Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.* [2] ***Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*	
NOTES:	

The City's latest water loss audit was completed for FY 2019-2020. Per the validated report, the City's non-revenue water (water loss) as a percent by volume of the water supplied was 10.2 percent. It is the percentage of non-revenue water (197 AF) to total water supplied (1,930 AF). The non-revenue water includes the water loss (64 AF) plus the unbilled unmetered water (133 AF).

4-6 Estimating Future Water Savings

As shown in Section 4-1, the City has seen a 17 percent reduction in per capita water use since 2013 (dropped from 176 gpcd to 146 gpcd). Active and passive savings have contributed to this reduction. Active savings are those that are enacted at the local level, such as rebate programs to promote water use reduction (i.e. toilet replacement and lawn replacement programs). Passive savings are those that result from more global factors, such as increased efficiency standards of system features or new codes and ordinances that limit or reduce water use. Public education has also contributed to water use reduction.

4-7 Water Use for Lower Income Households

The City's 2013-2021 Housing Element of the General Plan (2014) cites the Southern California Association of Governments (SCAG) 2012 Regional Transportation Plan (RTP) Forecast, which shows an increase of 893 persons and 260 households between 2008 and 2020. The SCAG 2012 RTP also shows an increase of employment of 888 jobs between 2008 and 2020. According to State law, SCAG has allocated the City's share of regional housing needs from 2014 to 2021 according to the Regional Housing Needs Assessment (RHNA), which has requirements for each income group. The income groups are defined by income limits, adjusted by household size. The income limits are in comparison to the Los Angeles County median household income, per the City's Housing Element (2014). The City's share is 169 total housing units. The breakdown of needed housing units by different income groups is shown in Table 4-6. The next iteration of the SCAG RHNA is planned for adoption in 2020. Regional housing needs are consistent with SCAG growth forecasts.

Table 4-6
Needed Housing Units by Income Group

Income Group	Income Limits	Number
Extremely Low	less than 30%	22
Very Low	30% to 50%	22
Low	50% to 80%	27
Moderate	80% to 120%	28
Above Moderate	above 120%	70
	Total	**169**

Per the 2014 Housing Element, the City's objective is to construct twenty-four (24) Extremely Low, twenty-four (24) Very Low, and thirty (30) Low Income Group housing units. The City has 1,535 lower income (less than 80% of Los Angeles County median household income, adjusted by household size) housing units out of a total of 4,275 housing units. Therefore, 35.9 percent of the housing units are considered lower income units. A breakdown of housing type by income group is not available, therefore it is assumed that the water demand for lower income housing units in the City is also about 35.9 percent of the total water use.

For this study, the future population projections are based on the SCAG growth forecast. Water demand projections are based upon the population projection and the 2020 water use (gpcd) which includes the current lower income housing units. Therefore, the future water use projections include the lower income residential demands as stated in Table 4-7.

Future water savings are not included in the water use projections. However, it is expected that water reduction efforts that have been made up to this point will continue in a similar manner.

Table 4-7
Inclusion in Water Use Projections

Submittal Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook)	No
Are Lower Income Residential Demands Included In Projections?	Yes
NOTES:	

4-8 Climate Change Considerations

The City's service area is a part of the Greater Los Angeles County (GLAC) Region. The 2013 Integrated Regional Water Management (IRWM) Plan [IRWMR, 2013] was developed to define a clear vision and direction for the sustainable management of water resources in the GLAC Region over a 25 year planning horizon. The main objectives of the IRWM was to reduce the Region's reliance on imported water; comply with water quality regulations by improving the quality of urban runoff, storm water and wastewater; protect, restore, and enhance natural processes and habitats; increase watershed friendly recreational space for all communities; reduce flood risk in flood prone areas; and adapt to and mitigate against climate change vulnerabilities.

Two climate change analysis efforts that were conducted within the GLAC Region are described in the 2013 IRWM Plan:

1. Climate Change in the Los Angeles Region: Temperature modeling effort led by UCLA for a partnership of the Los Angeles Regional Collaborative for Climate Action and Sustainability and the City of Los Angeles to refine climate modeling for the Greater Los Angeles area between 2041 and 2060.
2. Los Angeles Basin Storm Water Conservation Study: A partnership between the US Bureau of Reclamation and the Los Angeles County Flood Control District (LACFCD) to refine climate change projections influenced by localized geographic differences between coastal and inland areas, as well as changes in topography. Goal is to identify potential flooding and supply effects and vulnerabilities.

A summary of the impacts and effects of climate change on the GLAC Region were summarized in the 2013 IRWM as shown in Table 4-8.

Table 4-8
Impacts and Effects of Climate Change on GLAC Region

Impact to	Effect
Temperature change[1]	• Coastal LA Basin: Increases of 3.5 to 4°F (2041-2060) • Inland LA Basin: Projected increases of 4 to 4.5°F (2041-2060) • Extreme hot days: Number will triple in coastal areas and central Los Angeles, quadruple in San Fernando and San Gabriel Valleys (2041-2060)
Precipitation[2]	• Low-lying Southern California coastal areas: 2 inch decrease in average rainfall • Higher Southern California elevations: 4 to 5 inch decrease in average rainfall
Wildfire Risk[2]	• Little change is projected – already high fire risk
Sea Level Rise[3]	• Rise of 11 inches by 2050 (Southern California)
Demand	• Increases expected, but not quantified

Supply	• **State Water Project**[4]: delivery decrease of 7-10% by 2050
	• **Colorado River**[5]:
	  • Flows to decrease by 7-9% by 2050
	  • Shortages to Lower Basin of:
	  • 1 MAF over any 2 year window up to 51% of the time
	  • 1.5 MAF over any 5 year window up to 59% of the time
	• **Los Angeles River Aqueduct**[6]: Deliveries to decrease by 10,000 AFY
	Local groundwater and local river flow impacts not available

1. Climate Change in the Los Angeles Region Project: Mid-Century Warming in the Los Angeles Region (UCLA, 2012)
2. California Climate Change Adaptation Planning Guide (CA Emergency Management & Natural Resources Agencies, 2012)
3. Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future (NRC, 2012)
4. Using Future Climate Projections to Support Water Resources Decision Making in California (Climate Change Center, 2009)
5. Colorado River Basin Water Supply and Demand Study Final Reports (USBR 2012)
6. City of Los Angeles 2010 Urban Water Management Plan (LADWP, 2011)

Reference: The Greater Los Angeles County Integrated Regional Water Management Plan, 2013 Update, Table 2-7

Per the 2013 IRWM Plan, climate change is expected to increase average temperature by at least 3.5 degrees Fahrenheit by mid-century with the number of hot days (with temperatures greater than 95 degrees Fahrenheit) tripling at the coast. This effect is further exacerbated in the inland areas. Precipitation is expected to decrease by 2 to 5 inches throughout the South Coast of California with the most extreme reductions taking place in the higher elevations. The sea levels are estimated to rise an average of 11 inches along coast areas in Southern California. The three major imported water supplies feeding the Region are anticipated to have a delivery decrease as a result of climate change.

A list of prioritized vulnerabilities were developed by a Climate Change Subcommittee, which are shown in Table 4-9.

Table 4-9
Prioritized Climate Change Vulnerability Issues

Level	Vulnerability Issue
High	• Decreased ability to meet water conservation goals • Reduced resiliency to drought • Municipal water demand would increase • Decrease in imported water supply (from impacts to Bay-Delta system) • Decrease in coastal groundwater supply • Increase in wildfire risk and erosion and sedimentation which may impact water quality, flood control, and habitat • Damage to coastal infrastructure/recreation/tourism due to sea level rise and storm surge
Medium	• Invasives can reduce water supply available, alter flood regimes, and alter wildfire regimes • Decrease in local surface water supply • Decrease in seasonal water reliability • Increase in nutrient loading and decreased Dissolved Oxygen • Decrease in dilution flows • Decrease in recreational opportunity • Increase in source control or surface water treatment • Decrease in land due to SLR • Increased impacts to habitat and flow availability for species
Low	• Agricultural water demand would decrease • Limited ability to meet higher peaks in water demand (both seasonally and annually) • Habitat water demand would increase • Damage to ecosystem/habitat due to sea level rise • Increases in inland and flash flooding • Decrease in habitat protection against coastal storms • Decrease in hydropower potential

Reference: The Greater Los Angeles County Integrated Regional Water Management Plan, 2013 Update, Table 2-8

The predicted increase in temperatures in the region will likely cause water demands to increase in the future, particularly because potable water is still used for irrigation purposes in the City's service area and recycled water use is not planned to be significantly expanded in the future.

SECTION 5

SB X 7-7 BASELINES, TARGETS, AND 2020 COMPLIANCE

5-1 Introduction

This section outlines the process used to establish a 2015 Interim Water Use Reduction Target and 2020 Water Use Reduction Target, and results, per the Water Conservation Act of 2009 (Senate Bill X7-7).

The Water Conservation Act of 2009, also known as Senate Bill X7-7 (SB X7-7), sets a statewide water reduction goal of 20% by the year 2020. Each retail urban water user is required to establish their own 2020 water reduction targets according to one (1) of four (4) described methods by the California Water Code (CWC). An Interim 2015 water reduction target is half of the calculated 2020 water reduction target.

5-2 Selected Target Method

The CWC allows for four (4) methods to calculate the 2020 water use reduction target as follows:

- Method 1: Eighty percent (80%) of the water supplier's baseline per capita water use
- Method 2: Per capita daily water use estimated using the sum of performance standards applied to indoor residential use, landscaped area water use, and commercial, industrial, and institutional uses
- Method 3: Ninety-five percent (95%) of the target calculated by the state for its hydrologic region
- Method 4: Subtracts savings from identified practices from the agency's baselined GPCD.

The City has selected to use Method 1 to calculate its 2015 Interim and 2020 Water Use Reduction Targets. The units of measure used in this section, which is consistent with the rest of the report, are shown in Table 5-1.

Table 5-1
Units of Measure in UWMP

SB X7-7 Table 0: Units of Measure Used in UWMP*
Acre Feet
**The unit of measure must be consistent with Table 2-3*
NOTES:

5-3 Baseline Periods

SB X7-7 requires that the recycled water use in 2008 dictate whether the agency needs to establish a 10-year or 15-year baseline period range. If the recycled water use is less than 10% of total water deliveries, then a 10-year baseline shall be used, if not, then a 15-year baseline shall be used.

As shown in Table 5-2, the City's 2008 recycled water use was only 0.33% of the total water deliveries. Therefore, a 10-year baseline period was utilized. When a 10-year baseline period is used, the criterion is that the time period must end between December 31, 2007 and December 31, 2010. The time period selected for the City is 2000 to 2009.

A 5-year baseline must also be selected. The CWC defines the maximum 2020 Target as 95% of the 5-year baseline daily per capita water use, except for suppliers at or below a 5-year baseline of 100 gpcd. The criterion for the 5-year baseline period is that the time period must end between December 31, 2007 and December 31, 2010. The time period selected for the City is 2004 to 2008.

Table 5-2
Baseline Period Ranges

SB X7-7 Table-1: Baseline Period Ranges				
Baseline	**Parameter**	**Value**	**Units**	
10- to 15-year baseline period	2008 total water deliveries	2,129	Acre Feet	[1] *If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period.*
	2008 total volume of delivered recycled water	7	Acre Feet	
	2008 recycled water as a percent of total deliveries	0.33%	Percent	
	Number of years in baseline period[1, 2]	10	Years	
	Year beginning baseline period range	2000		[2] The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.
	Year ending baseline period range[3]	2009		
5-year baseline period	Number of years in baseline period	5	Years	[3] *The ending year must be between December 31, 2004 and December 31, 2010.*
	Year beginning baseline period range	2004		[4] *The ending year must be between December 31, 2007 and December 31, 2010.*
	Year ending baseline period range[4]	2008		NOTES:

5-4 Service Area Population

The Department of Finance (DOF) data was used to determine baseline and compliance year population (Table 5-3).

The City population for the selected 10-year and 5-year baseline periods and for 2015, the compliance year, are shown in Table 5-4.

Table 5-3
Method for Population Estimates

SB X7-7 Table 2: Method for Population Estimates	
Method Used to Determine Population	
☑	**1. Department of Finance** (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
☐	**2. Persons-per-Connection Method**
☐	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review
NOTES:	

5-5 Gross Water Use

City production and purchase data was used to calculate annual gross water use, as shown in Table 5-5, for the baseline averages and for the compliance year.

The City has two (2) sources of potable water: groundwater from the Central Basin Aquifer and imported water from the Metropolitan Water District of Southern California (MWD). The volume of water entering the distribution system from each water source during the baseline periods are shown in Table 5-6 and Table 5-7

Table 5-4
Service Area Population

SB X7-7 Table 3: Service Area Population					
Year		Population	Year		Population
10 to 15 Year Baseline Population			5 Year Baseline Population		
Year 1	2000	9,333	Year 1	2004	10,397
Year 2	2001	9,572	Year 2	2005	10,614
Year 3	2002	9,819	Year 3	2006	10,741
Year 4	2003	10,111	Year 4	2007	10,786
Year 5	2004	10,397	Year 5	2008	10,955
Year 6	2005	10,614	2015 Compliance Year Population		
Year 7	2006	10,741	**2015**		11,585
Year 8	2007	10,786	NOTES:		
Year 9	2008	10,955			
Year 10	2009	10,988			

Table 5-5
Annual Gross Water Use

SB X7-7 Table 4: Annual Gross Water Use *								
Baseline Year		Volume Into Distribution System	Deductions					Annual Gross Water Use
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water	Water Delivered for Agricultural Use	Process Water	
10 to 15 Year Baseline - Gross Water Use								
Year 1	2000	2,261			-		-	2,261
Year 2	2001	2,192			-		-	2,192
Year 3	2002	2,282			-		-	2,282
Year 4	2003	2,327			-		-	2,327
Year 5	2004	2,437			-		-	2,437
Year 6	2005	2,334			-		-	2,334
Year 7	2006	2,291			-		-	2,291
Year 8	2007	2,338			-		-	2,338
Year 9	2008	2,129			-		-	2,129
Year 10	2009	2,047			-		-	2,047
10 - 15 year baseline average gross water use								**2,264**
5 Year Baseline - Gross Water Use								
Year 1	2004	2,437			-		-	2,437
Year 2	2005	2,334			-		-	2,334
Year 3	2006	2,291			-		-	2,291
Year 4	2007	2,338			-		-	2,338
Year 5	2008	2,129			-		-	2,129
5 year baseline average gross water use								**2,306**
2015 Compliance Year - Gross Water Use								
2015		1,845	-		-		-	**1,845**
* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3								
NOTES:								

Table 5-6
Volume Entering the Distribution System – Imported Water

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)				
Name of Source		Metropolitan Water District of Southern California		
This water source is:				
☐	The supplier's own water source			
☑	A purchased or imported source			
Baseline Year		**Volume Entering Distribution System**	**Meter Error Adjustment* *Optional* (+/-)**	**Corrected Volume Entering Distribution System**
10 to 15 Year Baseline - Water into Distribution System				
Year 1	2000	270		270
Year 2	2001	182		182
Year 3	2002	155		155
Year 4	2003	329		329
Year 5	2004	392		392
Year 6	2005	1,026		1,026
Year 7	2006	2,286		2,286
Year 8	2007	399		399
Year 9	2008	96		96
Year 10	2009	26		26
Year 11	0	-		-
Year 12	0	-		-
Year 13	0	-		-
Year 14	0	-		-
Year 15	0	-		-
5 Year Baseline - Water into Distribution System				
Year 1	2004	392		392
Year 2	2005	1,026		1,026
Year 3	2006	2,286		2,286
Year 4	2007	399		399
Year 5	2008	96		96
2015 Compliance Year - Water into Distribution System				
2015		91		91
** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*				
NOTES:				

Table 5-7
Volume Entering the Distribution System – Groundwater

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)				
Name of Source		Groundwater from the Central Basin Aquifer		
This water source is:				
☑	The supplier's own water source			
☐	A purchased or imported source			
Baseline Year		**Volume Entering Distribution System**	**Meter Error Adjustment* *Optional* (+/-)**	**Corrected Volume Entering Distribution System**
10 to 15 Year Baseline - Water into Distribution System				
Year 1	2000	1,991		1,991
Year 2	2001	2,010		2,010
Year 3	2002	2,127		2,127
Year 4	2003	1,998		1,998
Year 5	2004	2,045		2,045
Year 6	2005	1,309		1,309
Year 7	2006	5		5
Year 8	2007	1,939		1,939
Year 9	2008	2,033		2,033
Year 10	2009	2,021		2,021
Year 11	-			0
Year 12	-			0
Year 13	-			0
Year 14	-			0
Year 15	-			0
5 Year Baseline - Water into Distribution System				
Year 1	2004	2,045		2,045
Year 2	2005	1,309		1,309
Year 3	2006	5		5
Year 4	2007	1,939		1,939
Year 5	2008	2,033		2,033
2015 Compliance Year - Water into Distribution System				
2015		1,754		1,754
** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*				
NOTES:				

5-6 Baseline Daily per Capita Water Use

Using the annual gross water use, the service population, and Method 1 with a 10-year base period of 2000 to 2009, the City's average baseline water use is 196 gpcd as shown in SB X7-7 Table 5-8 and Table 5-9. With a 5-year base period of 2004 to 2008, the City's average baseline water use is 193 gpcd. The 2015 compliance year average water use is 142 gpcd.

Table 5-8
Gallons per Capita per Day (GPCD)

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)				
Baseline Year		**Service Area Population**	**Annual Gross Water Use**	**Daily Per Capita Water Use (GPCD)**
10 to 15 Year Baseline GPCD				
Year 1	2000	9,333	2,261	216
Year 2	2001	9,572	2,192	204
Year 3	2002	9,819	2,282	208
Year 4	2003	10,111	2,327	205
Year 5	2004	10,397	2,437	209
Year 6	2005	10,614	2,334	196
Year 7	2006	10,741	2,291	190
Year 8	2007	10,786	2,338	193
Year 9	2008	10,955	2,129	174
Year 10	2009	10,988	2,047	166
10-15 Year Average Baseline GPCD				**196**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2004	10,397	2,437	209
Year 2	2005	10,614	2,334	196
Year 3	2006	10,741	2,291	190
Year 4	2007	10,786	2,338	193
Year 5	2008	10,955	2,129	174
5 Year Average Baseline GPCD				**193**
2015 Compliance Year GPCD				
2015		11,585	1,845	**142**
NOTES:				

Table 5-9
Gallons per Capita per Day Summary

SB X7-7 Table 6: Gallons per Capita per Day	
10-15 Year Baseline GPCD	196
5 Year Baseline GPCD	193
2015 Compliance Year GPCD	142
NOTES:	

5-7 2015 and 2020 Targets

Per Table 5-10, the City has selected to use Method 1 (eighty percent [80%] of the water supplier's baseline per capita water use) to calculate its 2015 Interim and 2020 Water Use Reduction Targets.

The Maximum 2020 Water Use Target, shown in Table 5-12, is 95% of the 5-year baseline or 183 gpcd. This is only considered the 2020 Target if the calculated 5-year baseline is above 100 gpcd, otherwise it is not applicable. The calculated water use target, per Method 1 is 80% of the baseline or 157 gpcd. The confirmed water use target is the smaller of the maximum and the calculated water use target. Therefore, the City's Confirmed 2020 Water Use Target is 157 gpcd.

The City's 2015 Interim Water Use Target is half way between the average baseline water use and the 2020 Water Use Target or 177 gpcd, as shown in SB X7-7 Table 8.

Table 5-10
2020 Target Method

SB X7-7 Table 7: 2020 Target Method		
Target Method		Supporting Documentation
☑	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D *Contact DWR for these tables*
☐	Method 3	SB X7-7 Table 7-E
☐	Method 4	Method 4 Calculator
NOTES:		

Table 5-11
Target Method 1

SB X7-7 Table 7-A: Target Method 1 20% Reduction	
10-15 Year Baseline GPCD	**2020 Target GPCD**
196	**157**
NOTES:	

Table 5-12
Confirm Minimum Reduction for 2020 Target

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target			
5 Year Baseline GPCD	**Maximum 2020 Target[1]**	**Calculated 2020 Target[2]**	**Confirmed 2020 Target**
193	183	157	**157**
[1] Maximum 2020 Target is 95% of the 5 Year Baseline GPCD except for suppliers at or below 100 GPCD. *[2] 2020 Target is calculated based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target.*			
NOTES:			

Table 5-13
2015 Interim Target (GPCD)

SB X7-7 Table 8: 2015 Interim Target GPCD		
Confirmed 2020 Target	10-15 year Baseline GPCD	2015 Interim Target GPCD
157	196	**177**
NOTES:		

The water use baselines and targets are summarized in Table 5-14.

Table 5-14
Baselines and Targets Summary

Submittal Table 5-1 Baselines and Targets Summary From SB X7-7 Verification Form					
Baseline Period	Start Year *	End Year *	Average Baseline GPCD*	Interim 2015 Target*	Confirmed 2020 Target*
10-15 year	2000	2009	196	177	157
5 Year	2004	2008	193		
**All cells in this table should be populated manually from the supplier's SBX7-7 Verification Form and reported in Gallons per Capita per Day (GPCD)*					
NOTES:					

5-8 2020 Compliance Daily Per Capita Water Use

The CWC mandates that retail water suppliers meet their Water Use Target by December 31, 2020. In 2020, the City's gross water use was 1,860 AF for a service are population estimated at 11,712 as described in Section 4. Therefore, the City's actual 2020 per capita water use was 146 GPCD which is approximately 7.0 percent below its Confirmed Water Use Target of 157 GPCD. The City's compliance with the 2020 Confirmed Target is summarized in Table 5-15. No adjustments using weather normalization, economic adjustment, or extraordinary events were applied to the GPCD.

Table 5-15
2020 Compliance

Submittal Table 5-2: 2020 Compliance - From SB X7-7 2020 Compliance Form				
2020 GPCD			2020 Confirmed Target GPCD*	Did Supplier Achieve Targeted Reduction for 2020?
Actual 2020 GPCD*	2020 TOTAL Adjustments*	Adjusted 2020 GPCD* *(Adjusted if applicable)*		
146			157	Yes
**All cells in this table should be populated manually from the supplier's SBX7-7 2020 Compliance Form and reported in Gallons per Capita per Day (GPCD)*				
NOTES:				

SECTION 6

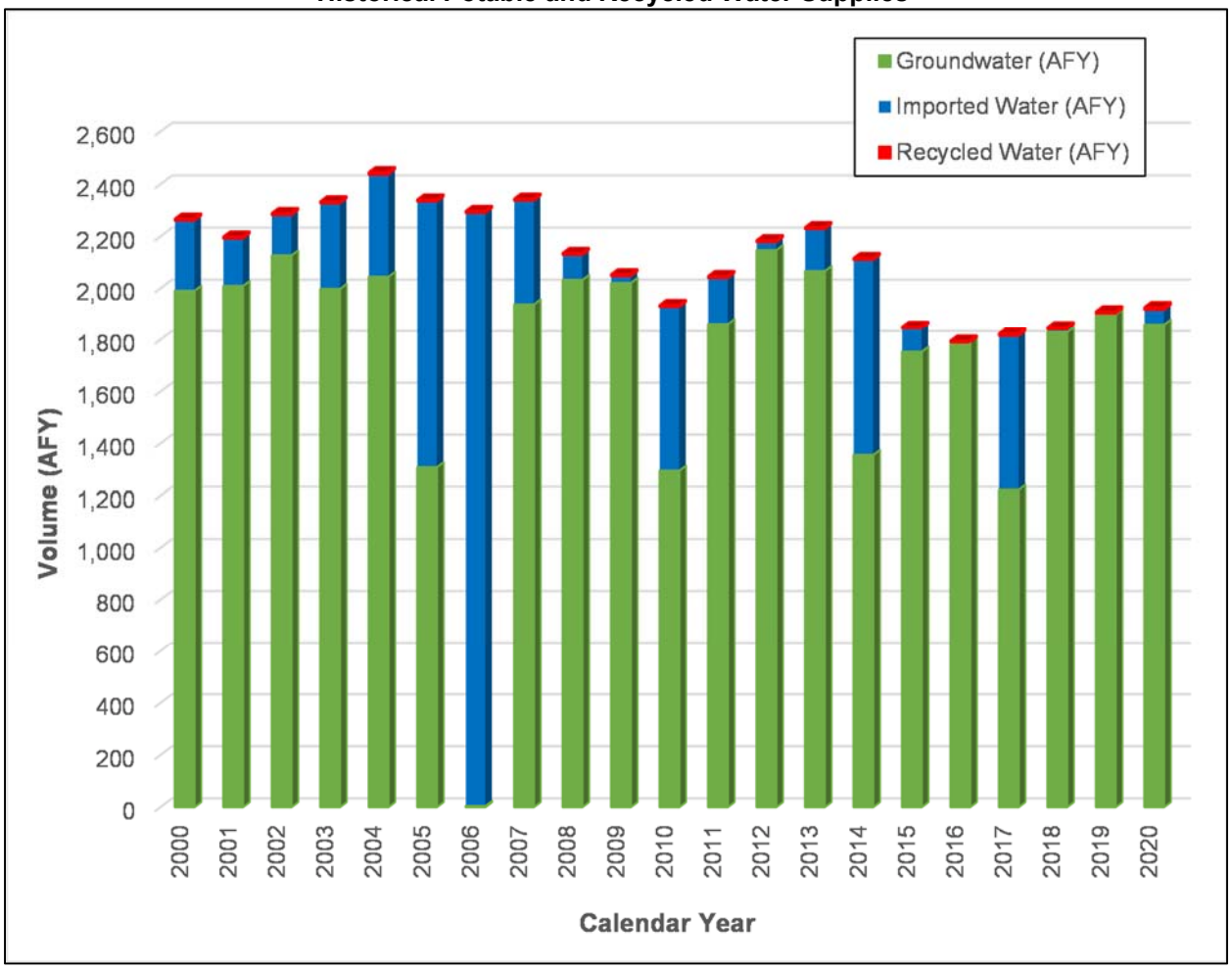
WATER SUPPLY CHARACTERIZATION

6-1 Introduction

This section describes the existing and future water sources available to the City of Signal Hill, their limitations, water quality, and exchange opportunities. The City's goal is to maximize the use of local sources in order to provide a reliable supply for the existing and planned development within its service area.

The City's water supply sources include groundwater, imported water, and recycled water. Historically, the City imports about 18 percent of its potable water supply and the remaining 82 percent is groundwater. There is currently only one customer served recycled water in the City, which is the Reservoir Park. The historical water supplies from each source is shown in Figure 6-1 from calendar year 2000 to 2020. On average, 1,741 AFY of groundwater was produced and 365 AFY of imported water was purchased. The amount of recycled water used was about 7 AFY. The peak total supply was 2,444 AF in 2004. The peak amount of imported water purchased was 2,286 AF in 2006.

Figure 6-1
Historical Potable and Recycled Water Supplies



6-2 Imported Water

The City has one connection with Central Basin Municipal Water District (CBMWD), a water wholesaler to local water agencies. CBMWD purchases imported water from Metropolitan Water District of Southern California (MWD) and sells it directly to retail agencies like the City. The City's connection to CBMWD, Central Basin-19 (CB-19), is located in Bixby Road near Gaviota Street. It has a capacity to provide up to 3,300 gallons per minute (gpm) of imported water to the City's potable water system.

Imported water is typically utilized to meet the peak demands during the warm summer months. The CBMWD connection is a backup supply to Well No. 7 and Well No. 8. As the capacity of these two wells decreases, the amount of imported water is increased.

6-3 Groundwater

6-3.1 Central Basin

The City draws groundwater from the Central Basin aquifer, which underlies approximately 227 square miles in southeastern Los Angeles County. The Central Basin Service Area is shown in Figure 6-2. It is bounded by the Hollywood Basin and the Elysian, Repetto, Merced, and Puente Hills; to the east by the Los Angeles/Orange County line; and to the south and west by the Newport-Inglewood Uplift, a series of discontinuous faults and folds that form a prominent line of northwest-trending hills including the Baldwin Hills, Dominguez Hills, and Signal Hill. [WRD, 2016]

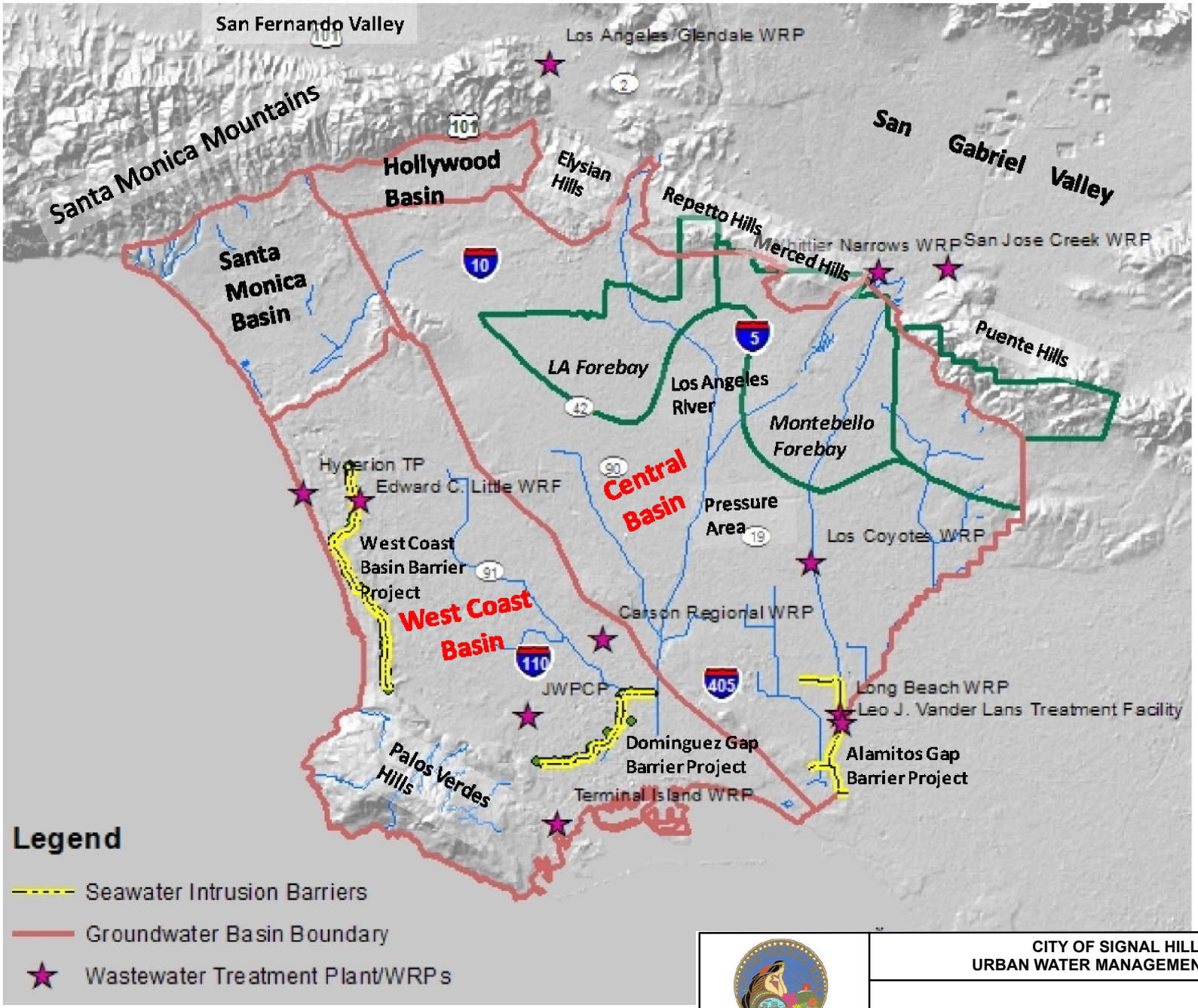
The Central Basin is divided into four sections – the Los Angeles Forebay, the Montebello Forebay, the Whittier Area, and the Pressure Area. The two forebays represent areas of unconfined aquifers that allow percolation of the surface water down into the deeper production aquifers to replenish the rest of the basin. The Whittier Area and the Pressure Area are confined aquifer systems that receive relatively minimal recharge from surface water but are replenished from the upgradient forebay areas or other groundwater basins. [WRD, 2016]

The City is one of 23 incorporated cities and several unincorporated communities that draw water from Central Basin which provides a substantial portion of the water supply needed by the residents, businesses, and industries in the area overlying the basin.

6-3.2 Central Basin Judgment

Following the introduction of the deep-well turbine pump in 1909, groundwater extraction increased dramatically along with the population boom and growth in industry and agriculture in the Southern California area. The groundwater demand exceeded the natural replenishment of Central Basin, causing a depletion of the aquifer. Water levels decreased to such low levels that the basin was subjected to sea water intrusion.

The Central and West Basin Water Replenishment District (CWBWRD) was formed in 1959, known today as the Water Replenishment District of Southern California (WRD). Its objective is to replenish and maintain the groundwater basins by purchasing imported water, recharging the basins, and halting sea water intrusion.



Reference: Groundwater Basins Master Plan, Water Replenishment District of Southern California, September 2016

CITY OF SIGNAL HILL
URBAN WATER MANAGEMENT PLAN

Central Basin Aquifer

DATE: September 2021

Figure 6-2

In 1962, CWBWRD filed a case in the California Superior Court to obtain title to rights to the use of groundwater, to secure judicial definition of each right as against each and every right involved, and to regulate withdrawals from the basin to protect the water supply from deteriorating. The final Judgment became effective on October 1, 1966. At that time, the Department of Water Resources was appointed the Watermaster. Since its inception, the Judgment has been amended three times. A copy of the third amended judgement can be found in Appendix 6-1 [CA, 2013].

The Judgment establishes adjudicated rights totaling 267,900 AFY but limits pumping to an Allowable Pumping Allocation (APA) of approximately 80 percent of this amount, which is equivalent to 217,367 AFY. Both amounts exceed the natural yield of the basin, and the judgment recognizes that WRD artificially replenishes the basin to make up the difference. [WRD, 2016]

The City's APA is set at 2,022 acre feet per year (AFY). To provide flexibility with regard to groundwater extractions, the Judgment contains provisions, such as the following [WRD, 2020]:

- Carryover: Parties are allowed to carryover up to the greater of
  - 60% of their APA, plus or minus any leases with flex or 20 AF, whichever is more, less the amount of water in a Party's storage account;
  - 20% of their APA, plus or minus any leases with flex

  This will help to meet any unforeseen water demands. Unused Exchange Pool water is carried over into the following fiscal year as well.
- Storage: Parties are permitted holding rights to store water in the Basin for a later recovery. Transfer of stored water between parties is also allowed.
- Regional Disadvantaged Communities Incentive Program (RDCIP): 23,000 AF of storage is allocated for the use or benefit of Disadvantage Communities (DAC) within Central Basin.
- Overextractions: Parties are allowed to pump up to 120 percent of their APA (or 20 AF, whichever is greater) provided that any over production is made up by under-production in the following year. Under certain circumstances, greater amounts can be extracted if approved by the Water Rights Panel.
- Lease: Parties are able to lease their pumping rights. Terms of the leases vary.
- Sales: Parties are able to sell their pumping rights.
- Exchange Pool: Parties who have excess water can make their pumping rights available to pumpers who are without sufficient water.

A copy of the Groundwater Basins Master Plan published by the Water Replenishment District of Southern California can be found in Appendix 6-2. A copy of the 2019-2020 Watermaster Service in the Central Basin summary report can be found in Appendix 6-3.

6-3.3 Watermaster

The latest Amended Judgment was entered on December 23, 2013. This amendment allows for water rights holders to have direct input into how the Judgment is administered and enforced. It confirms the retirement of DWR as the Watermaster and mandates the creation of a new Watermaster with three separate bodies serving different functions:

1. WRD is appointed as the Administrative Body to assist the Court in the administration and enforcement of the provisions of the Judgment and fulfill the Watermaster accounting and reporting functions
2. The Water Rights Panel is made up of seven Central Basin water rights holders. The panel enforces issues related to pumping rights within the adjudication.
3. The Storage Panel is composed of the Water Rights Panel and the WRD Board of Directors, which together review and approve storage projects within the basin.

WRD in coordination with other basin stakeholders developed a Groundwater Basins Master Plan (GBMP). The intent of the document was to provide a single reference for parties operating within and maintaining the West Coast and Central groundwater basins. It is a guide that will help stakeholders develop and assess initial concepts for additional recharge and pumping from the basins to utilize the basins fully and reduce dependence on imported water. [WRD, 2016]

6-3.4 Groundwater Levels and Monitoring

WRD tracks groundwater levels throughout the year by measuring the depth to water in monitoring wells and production wells located throughout the basin. There are automatic data-logging equipment at most of the nested monitoring wells to collect data more frequently. Pumpers in the basin also provide WRD water level data. WRD currently has 331 nested wells at 59 locations within the Central and West Coast Basins. [WRD, 2021]

Monitoring of groundwater levels can help in assessing the following:

- The amount of groundwater in the basin
- The areas of recharge and discharge from the basin
- The direction the groundwater is moving in the basin
- When replenishment water is needed
- Groundwater storage changes
- Source areas and pathways for seawater intrusion
- Effectiveness of seawater barrier injection wells

In 2018, the Central Basin water levels ranged from highs in excess of 150 feet above mean sea level to lows deeper than 110 feet below mean sea level. The highest water levels are in the Montebello Forebay and decrease to the south and west. [WRD, 2021]

6-3.5 Groundwater Recharge and Reliability

Due to low soil permeability and largely impermeable surfaces in the overlying areas, precipitation over the basin has minimal influence on the replenishment of the Central Basin. Natural replenishment of the basin occurs primarily from surface flow and underflow through Whittier Narrows from the San Gabriel Valley. Intentional replenishment by WRD is accomplished by capturing and spreading water at the Rio Hondo and the San Gabriel River Spreading Grounds in the Montebello Forebay (see Figure 6-2). Sources of replenishment water are local storm runoff, local dry-weather urban runoff, imported water purchased from

MWD, and recycled water purchased from the Los Angeles County Sanitation District (LACSD).[WRD, 2020]

A new groundwater storage plan was approved in December 2013, allowing storage of water during wet periods, for use during droughts, thus protecting the region's economy. The City joined the Cities of Cerritos, Downey, Lakewood, and Long Beach to create a storage plan with other cities, public water agencies, private water companies, and individual water rights holders. The new plan divides up over 330,000 AF of groundwater storage capacity in the areas underlying Southeast Los Angeles County. The WRD will be allowed 110,000 AF annually to recharge the water aquifer with imported water, stormwater, and other sources of water. Over 108,750 AF will be used for storage by those with water rights. The City has 2,022 AF of water rights. The agreement allows pumpers to store an additional 50% of their rights and carry-over unused water up to 60% in any year. [SH, 2014]

The new storage agreement includes a representative governance structure comprised of pumpers and the WRD, allowing them to place economic controls on the lease market. The agreement also recognizes the importance of new sources of groundwater supplies, including the capture and infiltration of stormwater. And innovative program is included for disadvantaged communities in need of water system improvements, water quality projects and rate stabilization. [SH, 2014]

In 2003, WRD established the Water Independence Now (WIN) initiative to end its reliance on imported water for groundwater replenishment. WIN was comprised of multiple projects aimed at maximizing local storm water and recycled water sources to replenish the groundwater basins. WIN's cornerstone project was the Albert Robles Center for Water Recycling and Environmental Learning (ARC), located in the City of Pico Rivera. Water from the LACSD San Jose Creek Water Reclamation Plant (SJCWRP) is diverted to the ARC for further treatment. Approximately 10,000 AF (3.25 billion gallons) of tertiary treated water (recycled) is treated annually to near-distilled levels through an advanced water treatment facility. Together, with another 11,000 AF (3.6 billion gallons) of recycled water, WRD delivers 21,000 AF of water to the San Gabriel Coastal Spreading Grounds where it percolates into the Central Basin. With the completion of ARC in 2019, WRD became completely locally sustainable as shown in Table 6-1.

Table 6-1
Central Basin Groundwater Recharge Supply Summary

Supply Source	2018-2019 (AFY)	2019-2020 (AFY)
Local Runoff	81,531	35,447
MWD Untreated Tier 1 Water Purchased by WRD	5,340	0
Make-Up Water from Upper San Gabriel Basin	0	0
Recycled Water		
Whittier Narrows Water Reclamation Plant	6,665	8,413
San Jose Water Reclmation Plant	37,818	36,391
Pomona Water Reclamation Plant	3,447	3,409
Total	**134,801**	**83,660**

Source: Watermaster Service in the Central Basin – Los Angeles County, July 1, 2019 - June 30, 2020

6-3.6 Groundwater Quality

WRD publishes an annual Regional Groundwater Monitoring Report for the Central and West Coast Basins. Per the 2017-2018 report, the groundwater quality in Central Basin is generally of "good quality and is

suitable for use by the pumpers in the District, the stakeholders, and the public. Groundwater from localized areas with marginal to poor water quality can still be utilized but may require treatment prior to being used as a potable source". In order to make this assessment, WRD collected over 550 water samples from its nested wells and obtained water quality data from the potable wells in the service area and from the Department of Drinking Water database. Twelve chemical compounds were used to summarize the overall water quality as follows: Total Dissolved Solids (TDS), Iron, Manganese, Chloride, Nitrate, TCE, PCE, Arsenic, Perchlorate, Hexavalent Chromium, 1,4-Dioxane, and TBA. [WRD, 2021]

Due to the quality of the groundwater in the basin, minimal water treatment occurs prior to entering the potable water system. The City disinfects the groundwater by means of chloramination to promote greater ease of blending with the imported water, which is chloraminated as well.

Sea water intrusion in the Alamitos Gap near the mouth of the San Gabriel River poses a threat to the groundwater in the basin. The Alamitos Gap Barrier Project (see Figure 6-2), operated by the Los Angeles County Department of Public Works (LADPW), is made up of 43 injection wells that are designed to prevent sea water intrusion into the basin by creating a groundwater pressure ridge. The project also includes 220 observation wells used to monitor groundwater levels and quality. [WRD, 2020]

6-3.7 Historical Groundwater Production

The City currently utilizes two (2) wells that draw water from the Central Basin aquifer. The newest well, Well No. 9, came online in October 2017. Well No. 7 is located in the north Long Beach area and is reaching the end of its useful life. The City has drilled another well (Well No. 10) to replace Well No. 8 which was recently destroyed.

The volume of water that the City has pumped from Central Basin between 2016 and 2020 is shown in Table 6-2.

Table 6-2
Groundwater Volume Pumped

Submittal Table 6-1 Retail: Groundwater Volume Pumped						
☐	Supplier does not pump groundwater. The supplier will not complete the table below.					
☐	All or part of the groundwater described below is desalinated.					
Groundwater Type	**Location or Basin Name**	**2016***	**2017***	**2018***	**2019***	**2020***
Fractured Rock	Central Basin	1,789	1,222	1,830	1,899	1,860
	TOTAL	1,789	1,222	1,830	1,899	1,860
**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*						
NOTES:						

6-4 Surface Water

The City currently does not utilize surface water as a source of supply.

6-5 Stormwater

The City currently does not utilize stormwater as a source of supply.

6-6 Wastewater and Recycled Water

6-6.1 Wastewater Collection, Treatment, and Disposal

The wastewater collection system providing service to the City's water service area is owned and maintained by the Sanitation Districts of Los Angeles County (SDLAC). The City's sewage is conveyed by gravity to one of two SDLAC facilities: the Joint Water Pollution Control Plant (JWPCP) in the City of Carson to the east or the Long Beach Water Reclamation Plant (LBWRP) in the City of Long Beach to the west.

The wastewater flow generated within the City is not continuously monitored or measured. SDLAC estimates the wastewater generation based on population, per capita generation rates, and permitted industrial flow rates. As shown in Table 6-3, the total average wastewater generation estimated with the use of SDLAC methods for 2000, 2015 and 2020 are 2.25 mgd, 1.90 mgd, and 1.82 mgd respectively. The wastewater generation has declined even though the population has increased. This is a trend seen throughout California and is largely attributed to the water conservation efforts implemented over recent years.

Table 6-3
City of Signal Hill Wastewater Generation by SDLAC Factors

Year	City of Signal Hill Population[1]	Wastewater Generation Rate (gpcd)[2]	Population Flow (mgd)[3]	Industrial Flow (mgd)[4]	Total Average Wastewater Generation (mgd)[5]	Total Average Wastewater Generation (AFY)
2000	9,333	87.8	0.82	1.43	2.25	2,519
2015	11,585	66.1	0.77	1.13	1.90	2,123
2020	11,712	60.8	0.71	1.11	1.82	2,041

[1] *Ref: California Department of Finance, Table E-5*
[2] *Rates provided by Sanitation District of Los Angeles County*
[3] *Population Flow = Population x Wastewater Generation Rate*
[4] *Industrial Flow provided by Sanitation District of Los Angeles County*
[5] *Total Average Wastewater Generation = Population Flow + Industrial Flow*

The wastewater collected within the City's service area in 2020 is estimated at 2,041 AFY (Table 6-4). It is pointed out that this estimate results in wastewater flows greater than the water production and purchase for 2020 (1,860 AF). Utilizing water consumption and return to sewer ratios (0.65 for single family residential, 0.85 for multi-family and institutional, and 0.90 for commercial and 0.95 for industrial) results in an average wastewater generation of 1.257 mgd (1,352 AFY). The wastewater generated within the City of Signal Hill is not treated or disposed of within the City's service area (Table 6-5).

Table 6-4
Wastewater Collected Within Service Area in 2020

Submittal Table 6-2 Retail: Wastewater Collected Within Service Area in 2020							
☐	There is no wastewater collection system. The supplier will not complete the table below.						
100	Percentage of 2020 service area covered by wastewater collection system *(optional)*						
100	Percentage of 2020 service area population covered by wastewater collection system *(optional)*						
Wastewater Collection			**Recipient of Collected Wastewater**				
Name of Wastewater Collection Agency	**Wastewater Volume Metered or Estimated?**	**Volume of Wastewater Collected from UWMP Service Area 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? *(optional)***	
Sanitation Districts of Los Angeles County	Estimated	2,041	Sanitation District of Los Angeles County	Long Beach Water Reclamation Plant / Joint Water Pollution Control Plant	No		
Total Wastewater Collected from Service Area in 2020:		2,041					
**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3* **.**							
NOTES: Wastewater volume estimated by the Sanitation Districts of Los Angeles County, using a per capital generation (60.8 gpcd) and permitted industrial waste flows. A portion of the wastewater collected in the City of Signal Hill is conveyed to the Long Beach Water Reclamation Plant and a portion is conveyed to the Joint Water Pollution Control Plant.							

Table 6-5
Wastewater Treatment and Discharge within Service Area in 2020

Submittal Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2020								
☑	**No wastewater is treated or disposed of within the UWMP service area.** The supplier will not complete the table below.							
						2020 volumes [1]		
Wastewater Treatment Plant Name	**Discharge Location Name or Identifier**	**Discharge Location Description**	**Method of Disposal**	**Plant Treat Wastewater Generated Outside the Service Area?**	**Treatment Level**	**Wastewater Treated**	**Discharged Treated Wastewater**	**Instream Flow Permit Requirement**
					Total	0	0	0
NOTES:								

6-6.2 Recycled Water Use

The City of Long Beach owns all the rights to effluent from the LBWRP per a 1968 agreement with SDLAC. The effluent is either utilized in the Long Beach Water District's (LBWD) recycled water system, delivered to the Leo J. Vander Lans Advanced Water Treatment Facility for use by the Alamitos Seawater Intrusion Barrier wells, or discharged to the Coyote Creek Outfall. Wastewater sent to the JWPCP is treated and sent to the Pacific Ocean.

Historically, Reservoir Park was the only property utilizing recycled water. A 1991 agreement between the City and the LBWD, allowed the City to connect to LBWD's recycled water system to irrigate Reservoir Park. The 1991 agreement expired after 25-years.

A new recycled water agreement was established in October 2017 between the City and LBWD. It will extend for another 25-years, expiring in 2042. This agreement establishes a provision for the City to use recycled water at Reservoir Park on an interruptible basis, meaning it is based on the condition that sufficient water is available after satisfying LBWD's customer needs. The City is under no obligation to purchase a minimum amount of recycled water. [LBWD, 2017]

The 2020 recycled water use and the future projected water use is shown in Table 6-6. The 2020 recycled water use is 10 AFY, based upon Reservoir Park billing data. Though there are no immediate plans to increase recycled water use, the City will continue to look for opportunities to expand the use of recycled water in the future.

Table 6-6
Recycled Water Direct Beneficial Uses within Service Area

Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area							
Name of Supplier	Sanitation Districts of Los Angeles County						
Name of Supplier	Long Beach Water Department						
Supplemental Water	0						
Source of 2020	N/A						
Beneficial Use Type	**General Description of 2020 Uses**	**Level of Treatment**	**2020 [1]**	**2025 [1]**	**2030[1]**	**2035[1]**	**2040[1]**
Landscape irrigation (exc golf courses)	Reservoir Park Irrigation	Tertiary	10	10	10	10	10
		Total:	10	10	10	10	10
		2020 Internal Reuse					
[1] ***Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in*							
NOTES: Reservoir Park is the only existing recycled water customer. The existing demand is based off of recent billing data.							

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

Submittal Table 6-5 Retail: 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual		
☐	Recycled water was not used in 2015 nor projected for use in 2020. The supplier will not complete the table below. If recycled water was not used in 2020, and was not predicted to be in 2015, then check the box and do not complete the table.	
Beneficial Use Type	**2015 Projection for 2020 [1]**	**2020 Actual Use [1]**
Landscape irrigation (exc golf courses)	20	10
Total	20	10
[1] **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.		
NOTE:		

Table 6-8
Methods to Expand Future Recycled Water Use

Submittal Table 6-6 Retail: Methods to Expand Future Recycled Water Use			
☑	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
P.6-10	Provide page location of narrative in UWMP		
Name of Action	**Description**	**Planned Implementation Year**	**Expected Increase in Recycled Water Use ***
		Total	0
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*			
NOTES:			

6-7 Desalinated Water Opportunities

There are no plans for the City to pursue desalination activities.

6-8 Exchanges or Transfers

The City maintains a connection to the City of Long Beach potable water system; however, it has not been exercised in some time and is not metered. There are no other plans for the City to pursue alternate exchanges or transfers.

6-9 Future Water Projects

There are no expected future water supply projects or programs planned that would provide a quantifiable increase to the City's water supply.

Table 6-9
Expected Future Water Supply Projects or Programs

Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
☑	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
☐	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other suppliers?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Supplier*
	(y/n)	*If Yes, Supplier Name*				
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table*						
NOTES:						

6-10 Summary of Existing and Planned Sources of Water

Currently, in 2020, the City utilizes three (3) water sources: imported water, groundwater, and recycled water. Information on the actual water supplied to the City in 2020 is shown in Table 6-10. The City of Signal Hill's Allowed Pumping Allocation (APA) is 2,022 AFY in the Central Basin. The projected water supplies up until 2040 is shown in Table 6-11.

Table 6-10
Water Supplies – Actual

Submittal Table 6-8 Retail: Water Supplies — Actual				
Water Supply		2020		
Category	Additional Detail on Water Supply	Actual Volume*	Water Quality	Total Right or Safe Yield* (optional)
Purchased or Imported Water	Central Basin Municipal Water District CENB-19	57	Drinking Water	
Groundwater (not desalinated)	Central Basin Aquifer	1,860	Drinking Water	2,022
Recycled Water	Long Beach Water Department (LBWD)	10	Recycled Water	
	Total	1,927		2,022
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*				
NOTES:				

Table 6-11
Water Supplies – Projected

Submittal Table 6-9 Retail: Water Supplies — Projected									
Water Supply		Projected Water Supply * Report To the Extent Practicable							
		2025		2030		2035		2040	
	Additional Detail on Water Supply	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)
Purchased or Imported Water	Central Basin Municipal Water District CENB-19	2,300		2,300		2,300		2,300	
Groundwater (not desalinated)	Central Basin Aquifer	2,022	2,022	2,022	2,022	2,022	2,022	2,022	2,022
Recycled Water	Long Beach Water Department (LBWD)	10		10		10		10	
Total		4,332	2,022	4,332	2,022	4,332	2,022	4,332	2,022
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*									
NOTES: CBMWD Connection CENB-10 has a capacity of up to 3,300 gpm (4.75 mgd; 5,322 AFY). Historically, the highest amount of imported water was utilized in 2006 when the City used 2,286 AF of imported									

6-11 Climate Change Impacts to Supply (Optional)

Climate change impacts have already started to create critical challenges for water resources management in Southern California. More intense storm events and the changing frequency and duration of drought years are becoming evident throughout the State and the western United States. This makes future water supplies available to the region more uncertain, particularly imported water resources that are uniquely vulnerable to the changes in the state's snowpack.

The *City of Long Beach Climate Resiliency Assessment Report Appendices* prepared by the Aquarium of the Pacific [AP, 2015] discusses how climate changes will likely decrease the imported water supply availability to the Southern California area, potentially leaving agencies in a water shortage condition. The impacts of climate change are described as follows:

> *"Climate models project an increase from today's average surface temperatures of the Western U.S. by 1 degree to 3°F (0.5 to 1.7°C) by the year 2030, and rise 2 degrees to 4.5 °F degrees (1.2 to 2.5°C) by the year 2050. The reliability of Southern California's imported supplies is highly dependent on the amount of precipitation in the watersheds of the Colorado River and the Sierra Nevada, specifically the form of precipitation as rain or snow. Imported supplies becomes less reliable as more precipitation comes in the form of rainfall and as the snowpack melts earlier in the year. Warmer temperatures will exacerbate both of these factors: more precipitation will come in the form of rain and what snowpack is formed, will melt earlier in the year. Projections of climate change suggest the Western United States (WUS) and the*

Southwest are particularly vulnerable due to this heavy reliance of temperature sensitive snowpack."

A summary of the climate change impacts by the year 2050 in the Western U.S. was provided as follows:

- Temperature in the area expected in increase roughly 2 to 4.5°F
- The increase in temperature is expected to shift peak runoff one or two weeks earlier in the year and reduce the overall snowpack
- The intensity and frequency of daily maximum runoff and precipitation events will increase (i.e., more flood-type events).
- The frequency of abnormally low annual runoff will increase (i.e., more drought events).
- For these reasons, imported water supplies are expected to be less reliable by the year 2050.

The report [AP, 2015] stated that "*without citywide storm water capture efforts, any additional precipitation projected with climate change will not significantly offset demand*." The primary recommendations for increasing the City of Long Beach's climate-resiliency of its water supply, which can be applied to the City of Signal Hill as well, included the following:

- Encourage turf replacement. Continue to replace landscapes that are not native to the region and require large amounts of irrigation water with those that thrive in semi-arid climates with little to no supplemental irrigation.
- Encourage projects to capture stormwater on-site and minimizes urban runoff. Consider studying the cost effectiveness of different stormwater capture strategies, particularly on site at homes, street medians, commercial sites, parks and other areas.

6-12 Energy Intensity

Water is distributed from three wells, three reservoirs, three booster pump stations, and one imported water connection. The electric billing data could not be obtained for the facilities, therefore the City's energy intensity for its water facilities cannot be reported at this time.

SECTION 7

WATER SERVICE RELIABILITY AND DROUGHT RISK ASSESSMENT

7-1 Introduction

California Water Code (CWC) §10635 requires every urban water supplier to include as part of the Urban Water Management Plan (UWMP) an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry years. The supply and demand assessment is a comparison of the total water supply sources available to the long-term projected water use over the next 20 years, in five year increments for a normal, single dry water year, and a drought lasting five consecutive years.

In addition, new requirements for the 2020 UWMP include a Drought Risk Assessment (DRA). The DRA includes the following:

1. A description of the data, methodology, and basis for one or more supply shortage conditions
2. A determination of the reliability of each source of supply under a variety of water shortage conditions.
3. A comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.
4. Considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria

7-2 Water Service Reliability Assessment

7-2.1 Constraints on Water Sources

The City's water supplies include groundwater, imported water, and recycled water. The City receives the majority of its water supply from pumped water from within the Central Basin and the rest is supplemented by imported water. One City park irrigation system is served by recycled water and the City is currently working to expand this recycled water system.

7-2.1.1 Groundwater Supplies

Groundwater supplies come from Central Basin which was adjudicated in 1965 due to declining water levels. In the years following adjudication, groundwater levels rebounded and have been maintained by active recharge and annual limits to groundwater pumping by each party to the adjudication. The Central Basin Watermaster is tasked with ensuring compliance with the Judgment and preventing future overdraft conditions.

Groundwater elevation and quality in Central Basin has been monitored by the WRD for over 60 years. Monitoring data is compiled into annual reports, providing a comprehensive overview of the status of the basin. The most recently produced annual report is the *Regional Groundwater Monitoring Report, Water Year 2019-2020*.

In water year 2019-2020, the Central Basin water levels varied across the basin. In the northern portion of the basin, the area between the Los Angeles and Montebello Forebays, water levels have decreased by as much as about three feet from the prior year. Along the eastern border of the basin, water levels range from nearly three feet lower in the north to more than eight feet higher in the south than they were in fall 2019. Across the southern and western portions of the basin, water levels range from nearly five feet higher in the south to relatively unchanged in the west compared to the prior year.

In addition to monitoring, the Water Replenishment District of Southern California (WRD) replenishes the Central Basin with a combination of local storm water and recycled water. The completion of the Albert Robles Center for Water Recycling and Environmental Learning (ARC) in 2019 enabled WRD to be completely locally sustainable, eliminating imported water as a source of replenishment. The City does not anticipate that legal or quantity issues will constrain the groundwater supply in the future.

WRD reports the groundwater quality in Central Basin is generally of "good quality and is suitable for use by the pumpers in the District, the stakeholders, and the public. Groundwater from localized areas with marginal to poor water quality can still be utilized but may require treatment prior to being used as a potable source". Twelve chemical compounds were used to summarize the overall water quality as follows: Total Dissolved Solids (TDS), Iron, Manganese, Chloride, Nitrate, TCE, PCE, Arsenic, Perchlorate, Hexavalent Chromium, and 1,4-Dioxane. [WRD, 2021]

Beginning in water year 2018-2019 and ending in water year 2019-2020, WRD completed a District-wide assessment for the presence of PFAS constituents in WRD nested monitoring wells and production wells. PFOS and PFOA detections in Central Basin are generally restricted to the vicinity of the Montebello Forebay. They occur within the Montebello Forebay, immediately adjacent and to its west, as well as downgradient along the Los Angeles and San Gabriel Rivers. Fortunately for the City, PFOS and PFOA testing has resulted in non-detect at Well 9, which is currently the only well required to be tested.

Sea water intrusion in the Alamitos Gap near the mouth of the San Gabriel River poses a threat to the groundwater in the basin. The Alamitos Gap Barrier Project, operated by the Los Angeles County Department of Public Works (LADPW), is made up of 43 injection wells that are designed to prevent sea water intrusion into the basin by creating a groundwater pressure ridge. The project also includes 220 observation wells used to monitor groundwater levels and quality. [WRD, 2020]

7-2.1.2 Imported Water Supplies

Imported water is provided by the Metropolitan Water District of Southern California (MWD). MWD is a wholesale water provider serving most of Southern California, therefore, its water reliability is essential to the region. MWD water supplies are imported from Northern California through the State Water Project's California Aqueduct and from the Colorado River through the Colorado River Aqueduct.

Water imported by MWD comes from two main sources, the State Water Project (SWP) and the Colorado River Aqueduct (CRA). As part to of MWD's 2015 Integrated Resources Plan (IRP) Update, MWD evaluated the reliability of these two water supply sources. Through the process, MWD identified the following risks affecting the reliability of supplies:

- Drought conditions

- Endangered species protection and conveyance needs in the Sacramento-San Joaquin River Delta (Bay-Delta) system
- Changing climate patterns
- Difficulty and implications of environmental review, documentation, and permitting for water supply projects
- Public perception of recycled water use
- Opposition to local seawater desalination

In the IRP, MWD lays out planned actions to address these risks. MWD is committed to supply reliability and states that "through the implementation of the IRP, MWD and its member agencies will have the full capability to meet full-service demands at the retail level at all times." Based on this analysis and the fact that City does not anticipate utilizing imported supplies except in an emergency situation, the City does not anticipate that imported water will constrain supply reliability in the future.

Quality of imported water supplies is not expected to impact supply reliability for the City. Imported water comes from the Bay-Delta system through the SWP and from the Colorado River through the CRA. Water imported through the SWP is generally of high water quality, with total dissolved solids (TDS) concentrations averaging 325 mg/L. Potential water quality concerns for SWP water include total organic carbon (TOC), bromide, and salinity. TOCs and bromides present the greatest water quality concern for the SWP because they cause operational constraints and require additional treatment at MWD facilities. The most significant concern for supplies from the Colorado River is salinity. Water imported through the CRA has much higher salinity than from the SWP, averaging 630 mg/L. SWP water is typically blended with CRA water to reduce the overall salinity of imported water delivered through MWD and its member agencies.

7-2.1.3 Recycled Water Supplies

The City receives recycled water from the City of Long Beach for one customer, Reservoir Park. The City may increase recycled water use in the future by extending the system to additional parks. Recycled water exhibits less variability than other supply sources and it is dependent on wastewater generation and not precipitation or other climatological factors. As recycled water is not limited by hydrologic variation, it is considered a nearly 100 percent reliable, drought resistant supply. Typical water quality concerns with recycled water include salinity, nutrients, and pharmaceuticals and personal care products. Water quality issues with recycled water are less significant than other sources that are used for potable purposes. All recycled water distributed in the City's service area is treated to tertiary standards and is not expected to impact utilization of this water supply for non-potable uses in the future.

7-2.2 Year Type Characterization

One of the most significant constraints on water supply for Southern California water agencies are droughts. The City's service area experienced drought conditions from 2012 to 2016, which affected other agencies within the Central Groundwater Basin as well. It was not until rainfall year 2016-2017 that Southern California experienced more "normal" rainfall levels.

Most agencies within the Central Groundwater Basin have at least two sources of water, Central Basin groundwater and MWD imported water. During drought conditions, MWD faces a number of challenges in providing imported water to its customers and therefore reduced imported water supplies lead to increased groundwater usage. Although the supply of groundwater has historically been adequate to meet the demands of customers, the City remains vulnerable to water shortages due to the heavy reliance on groundwater and the limited rainfall typical of Southern California.

For the 2020 UWMP, the City has selected its normal, single dry and multiple dry years based on historical precipitation information maintained by the Los Angeles County Department of Public Works shown in Table 7-1. The rainfall data at the Signal Hill City Hall Station 415 did not extend past 2001-2002. Therefore, the average rainfall amount at Long Beach Airport Station 662D and Long Beach Reclamation Plant Station 1254 was utilized in its place.

Table 7-1
Rainfall Data

Water Year (Oct. 1- Sept. 30)	Signal Hill City Hall, Sta. 415 (in)	Long Beach Airport Sta. 662D (in)	Long Beach Reclamation Plant Sta. 1254 (in)	Precipitation (in)	% of Average Precipitation	Water Year Type
1996-1997	13.60	14.13	14.00	13.60	117	Used Station 415
1997-1998	29.01	29.21	25.59	29.01	250	Used Station 415
1998-1999	8.22	8.54	8.91	8.22	71	Used Station 415
1999-2000	-	6.53	7.88	7.21	62	Used Station 415
2000-2001	13.15	10.90	15.67	13.15	113	Used Station 415
2001-2002	3.44	2.21	4.08	3.44	30	Used Station 415
2002-2003	-	-	15.33	15.33	132	Used Station 1254
2003-2004	-	-	6.69	6.69	58	Used Station 1254
2004-2005	-	-	28.00	28.00	241	Used Station 1254
2005-2006	-	-	9.28	9.28	80	Used Station 1254
2006-2007	-	2.58	4.11	3.35	29	Single Dry Year
2007-2008	-	10.90	10.21	10.56	91	Normal Dry Year
2008-2009	-	9.44	9.54	9.49	82	
2009-2010	-	15.66	15.22	15.44	133	
2010-2011	-	18.80	18.50	18.65	161	
2011-2012	-	7.59	7.70	7.65	66	Multiple Dry Year
2012-2013	-	6.69	6.59	6.64	57	Multiple Dry Year
2013-2014	-	4.62	-	4.62	40	Multiple Dry Year
2014-2015	-	9.35	9.53	9.44	81	Multiple Dry Year
2015-2016	-	4.99	6.31	5.65	49	Multiple Dry Year
2016-2017	-	20.10	20.14	20.12	173	
2017-2018	-	3.53	3.48	3.51	30	
2018-2019	-	17.63	17.83	17.73	153	
Minimum	**3.44**	**2.21**	**3.48**	**3.35**		
Average	**13.48**	**10.71**	**12.03**	**11.60**		

** Rainfall data from Los Angeles County Dpartment of Public Works (http://www.ladpw.org/wrd/precip/)*

From water year 1996-1997 to 2018-2019, the average precipitation was about 11.60 inches. The City has experienced numerous and significant annual precipitation changes. Precipitation in water year 2007-2008 was the closest to the average and was therefore designated the normal dry year. The single dry year occurred in water year 2006-2007 when the precipitation was 3.35 inches or 29 percent of normal. Water years 2011-2012 through 2015-2016 had less than normal precipitation rates. Therefore, they were designated as the multiple dry years. The basis of water year data is shown in Table 7-2.

Table 7-2
Basis of Water Year Data

Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)			
Year Type	**Base Year** If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020	**Available Supplies if Year Type Repeats**	
		☐ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____	
		☑ Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available *	**% of Average Supply**
Average Year	2008	**2,129**	100%
Single-Dry Year	2007	**2,338**	110%
Consecutive Dry Years 1st Year	2012	**2,178**	102%
Consecutive Dry Years 2nd Year	2013	**2,228**	105%
Consecutive Dry Years 3rd Year	2014	**2,110**	99%
Consecutive Dry Years 4th Year	**2015**	**1,845**	87%
Consecutive Dry Years 5th Year	**2016**	**1,789**	84%
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*			
NOTES:			

7-2.3 Water Service Reliability

The "average" year is interchangeable with "normal" year. The comparison of supply and demand in normal water years is shown in Table 7-3 based on projections enumerated in *Section 6 – Water Supply Characterization and Section 4 – Water Use Characterization.* The comparison is provided for potable water only since the City only provides potable water service to its customers. In a normal water year, the City anticipates having enough supply to meet projected demands for years 2025 through 2040, with an average surplus of 2,333 AF per year.

Table 7-3
Normal Year Supply and Demand Comparison

Submittal Table 7-2 Retail: Normal Year Supply and Demand Comparison				
	2025	2030	2035	2040
Supply totals	4,322	4,322	4,322	4,322
Demand totals	1,947	1,974	2,001	2,034
Difference	2,375	2,348	2,321	2,288
NOTES: Recycled water use is not included in the supply or demands.				

In all future singe dry year scenarios, the City anticipates having the same volume of water available to it as is available under normal year conditions. Groundwater replenishment varies with hydrology and access to recharge supplies, but the ability to extract groundwater is more a function of long-term average recharge and is less subject to hydrologic variability from year to year. Additionally, WRD's ARC facility and other replenishment efforts to increase recharge in wet years to allow more storage and extraction in dry years will further increase the reliability of the City's water supply in dry years. As evidence, in 2007, the year selected to represent single dry year hydrology, groundwater yield was unaffected by the drought and the City had access to enough water supply to satisfy all demands. In a single dry year, the City anticipates having enough supply to meet projected demands for years 2025 through 2040, with an average surplus of 1,913 AF per year.

Table 7-4
Single Dry Year Supply and Demand Comparison

Submittal Table 7-3 Retail: Single Dry Year Supply and Demand Comparison				
	2025	2030	2035	2040
Supply totals*	4,322	4,322	4,322	4,322
Demand totals*	2,367	2,394	2,421	2,454
Difference	1,955	1,928	1,901	1,868
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*				
NOTES: Demand in 2007 = 2,338 AF. This demand was increased by the amount of water demand expected from an increase in population for each of the future years.				

Under the multiple dry year scenario (5-consecutive year drought conditions), based on hydrologic conditions similar to the 2012-2016 period, the City also anticipates having enough water supplies to meet the majority of projected demands as shown in Table 7-5.

- The first dry year was assumed to be similar to 2012 with an adjustment for future demands due to a population increase. The 2012 demand was 2,178 AF.
- The second dry year demand was assumed to be similar to 2013 with an adjustment for future demands due to a population increase. The 2013 demand was 2,228 AF. The increase in demand is about 2.3 percent from the previous year.
- The third dry year demand was assumed to be similar to 2014 with an adjustment for future demands due to a population increase. The 2014 demand was 2,110 AF. The decrease in demand is about 5.3 percent from the previous year.

- Due to the establishment of a Level 1 Water Shortage Condition and the implementation of drought messaging in 2014, the City's actual demands decreased to 1,845 AF or by about 12.6 percent in from the previous year. Since the City now has permanent water conservation requirements and best management practices in place, the water demands are not expected to decrease as significantly when a Level 1 Water Shortage Condition is implemented again. Therefore, the fourth dry year demand was assumed to drop by 5.0 percent from the prior year with an adjustment for future demands due to a population increase.
- In the fifth dry year, demands were assumed to decrease by 5.0 percent from the prior year with an adjustment for future demands due to population increase.

Table 7-5
Multiple Dry Years Supply and Demand Comparison

Submittal Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison					
		2025*	2030*	2035*	2040*
First year	Supply totals	4,322	4,322	4,322	4,322
	Demand totals	2,207	2,234	2,261	2,294
	Difference	2,115	2,088	2,061	2,028
Second year	Supply totals	4,322	4,322	4,322	4,322
	Demand totals	2,257	2,284	2,311	2,344
	Difference	2,065	2,038	2,011	1,978
Third year	Supply totals	4,322	4,322	4,322	4,322
	Demand totals	2,139	2,166	2,193	2,226
	Difference	2,183	2,156	2,129	2,096
Fourth year	Supply totals	4,322	4,322	4,322	4,322
	Demand totals	2,034	2,061	2,088	2,121
	Difference	2,288	2,261	2,234	2,201
Fifth year	Supply totals	4,322	4,322	4,322	4,322
	Demand totals	1,934	1,961	1,988	2,021
	Difference	2,388	2,361	2,334	2,301
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*					
NOTES: The 1st through 3rd years are based on the demand in 2012 through 2014. The 4th and 5th dry year demands were assumed to drop by 5% from the previous year. The demands were increased by the amount of water demand expected from an increase in population for each of the future years.					

7-3 Drought Risk Assessment

A new requirement of the 2020 UWMP is the drought risk assessment [CWC §10635(b)]. The DRA evaluation is required so that a water supplier can contemplate management of their water supplies during stressed hydrologic conditions in relation to variations in customer water use. Most importantly, it provides the water supplier an opportunity to evaluate the functionality of its Water Shortage Contingency Plan (WSCP) shortage response actions and understand the degree of response that may be necessary as it relates to managing water supplies. The evaluation can help identify undesired risks and allow proactive steps to be taken prior to the next actual drought period lasting at least five consecutive years.

The drought risk assessment (DRA) must include a description of the following:

1. Data and methods used

2. Basis for the supply shortage conditions
3. Determination of the reliability of each source
4. Comparison of total water supplies and uses during the drought
5. Consideration of historical drought hydrology, climate change conditions, regulatory changes and other locally applicable criteria

7-3.1 Data and Methods

The demands are based on production records. In 2020, the City provided 1,918 AF of water to its customers as shown in Table 4-2. Using the 2020 population of 11,712, the water use per person is calculated to be 146 gpcd. Projected demands are based on 146 gpcd and the projected population of the future year. The potable water demand projected for 2025 is 1,947 AF as shown in Table 4-3. Population projections were discussed in Section 3-7 and shown in Table 3-5. The water use increase was assumed to increase at a linear rate from 2021 to 2025.

The City's total groundwater rights is 2,022 AF. For the Drought Risk Assessment, the City conservatively conducted the assessment as if only the amount of groundwater rights was available and there was no carryover included in the City's total available groundwater supply.

7-3.2 Water Source Reliability

The City's groundwater right of 2,022 AFY in the Central Basin Aquifer

The City has minimized its use of imported water by maintaining its well capacity. Well No. 8 was deteriorating due to age and recently destroyed. Well No. 10 is a new well that has been drilled and slated for completion in early 2022. The City plans to get as much production form the wells as possible to meet all demands. Imported water is only a supplemental supply during high demand periods or in the case that a well is shut down for maintenance purposes or any other issues that may arise. Once Well No. 10 is completed and online, the City supply is expected to be 100 percent groundwater.

7-3.3 Water Supply and Use Comparison

The five-year DRA analysis is shown in Table 7-6.

Table 7-6
Five-Year Drought Risk Assessment

Submittal Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)	
2021	**Total**
Total Water Use	1,931
Total Supplies	2,022
Surplus/Shortfall w/o WSCP Action	91
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	91
Resulting % Use Reduction from WSCP action	0%

Table 7-6 (continued)
Five-Year Drought Risk Assessment

Submittal Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)	
2022	**Total**
Total Water Use	1,945
Total Supplies	2,022
Surplus/Shortfall w/o WSCP Action	77
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	77
Resulting % Use Reduction from WSCP action	0%
2023	**Total**
Total Water Use	1,958
Total Supplies	2,022
Surplus/Shortfall w/o WSCP Action	64
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	64
Resulting % Use Reduction from WSCP action	0%
2024	**Total**
Total Water Use	1,971
Total Supplies	2,022
Surplus/Shortfall w/o WSCP Action	51
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	51
Resulting % Use Reduction from WSCP action	0%

Table 7-6 (continued)
Five-Year Drought Risk Assessment

Submittal Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)	
2025	**Total**
Total Water Use	1,984
Total Supplies	2,022
Surplus/Shortfall w/o WSCP Action	38
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	38
Resulting % Use Reduction from WSCP action	0%

7-4 Climate Change

As described in Section 4-8, the 2013 Integrated Regional Water Management (IRWM) Plan, precipitation in the Greater Los Angeles County (GLAC) Region is expected to decrease by 2 to 5 inches throughout the South Coast of California with the most extreme reductions taking place in the higher elevations. This could result in a decrease in local groundwater supplies. Fortunately, WRD took the initiative and completed the construction of the ARC so that 21,000 AFY of advanced treated water can be used to replenish the Central Basin. This has ended WRD's reliance on imported water for groundwater replenishment as well as significantly reducing the need for local runoff for replenishment. In 2019-2020, the amount of water contributing to the replenishment of the Central Basin was 35,447 AF, down from 81,531 AF in the previous year. A significant reduction in supply due to climate change is not expected over the 25-year planning horizon.

Climate change may not significantly reduce supply in Central Basin, but demands in the GLAC Region are predicted to increase due to increased temperatures, especially because potable water is still used for irrigation purposes. This in turn could place a larger demand on the groundwater supplies that are available. In order to account for this possibility, the City excluded carry over from year to year in the total supplies for the Drought Risk Assessment. Only the City's total groundwater rights of 2,022 AF was considered as supply.

SECTION 8

WATER SHORTAGE CONTINGENCY PLAN

8-1 General

A water shortage occurs when the water supply available is insufficient to meet the normally expected customer water use at a given point in time. It may occur due to a number of reasons, such as population growth, climate change, drought, and/or catastrophic events.

A Water Shortage Contingency Plan (WSCP) is a document used by a water supplier to prevent catastrophic service disruptions through proactive, rather than reactive, management. It documents the process used by a supplier to anticipate water supply disruptions and describes how the supplier intends to address a water shortage when it occurs. It can also be used to justify the projects, policies, and programs determined necessary to mitigate the risk of a water shortage condition.

8-2 New Requirements

In response to the severe drought of 2012-2016, new legislation in 2018 created a WSCP mandate replacing the water shortage contingency analysis under former law. While there are overlapping aspects with the prior law, the new requirements have several prescriptive elements a supplier's WSCP must now include, such as:

1. Key attributes of its Water Supply Reliability Analysis conducted pursuant to Water Code Section 10635. [Water Code Section 10632(a)(1)]
2. 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. [Water Code Section 10632(a)(3)(A)]
3. 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 demands. [Water Code Section 10632(a)(4)]
4. Procedures for conducting an annual water supply and demand assessment with prescribed elements. Under Water Code Section 10632.1, urban water suppliers are required to submit, by July 1 of each year, beginning the year following adoption of the 2020 UWMP, an annual water shortage assessment report to DWR. [Water Code Section 10632(a)(2)]
5. Communication protocols and procedures to inform customers, the public, and government entities of any current or predicted water shortages and associated response actions. [Water Code Section 10632(a)(5)]
6. Monitoring and reporting procedures to assure appropriate data is collected to monitor customer compliance and to respond to any state reporting requirements. [Water Code Section 10632(a)(9)]
7. A reevaluation and improvement process to assess the functionality of its WSCP and to make appropriate adjustments as may be warranted. [Water Code Section 10632(a)(10)]

8-3 Water Shortage Contingency Plan

The City amended its Municipal Code chapter 13.03 with the current Water Conservation Plan (or Water Shortage Contingency Plan) in May 2009 per Ordinance No. 2009-04-1399, included in Appendix 8-1. The City updated and amended this WSCP to meet the new requirements of the current legislation. The updated WSCP is included as Appendix 8-2. The City adopted the updated WSCP on November 9, 2021 per Resolution No. 2021-11-6648.

A summary of the WSCP plan levels is provided in Table 8-1. A summary of demand reduction actions associated with each plan level is provided in Table 8-2.

Table 8-1
Water Shortage Contingency Plan Levels

Submittal Table 8-1 Water Shortage Contingency Plan Levels			
Shortage Level	**Percent Shortage Range**	**Equivalent 2020 WSCP Standard Shortage Level**	**Shortage Response Actions**
1	Up to 10%	1	In addition to the permanent water conservation requirements, the folowing requirements apply: 1. Limits on watering days - not to exceed 3 days per week 2. Obligation to fix leaks, breaks, or malfunctions - within 72 hours of discovery 3. Filling or re-filling of ornamental lakes or ponds is prohibited except to sustain existing aquatic life 4. City may implement other prohibited water uses after providing notice to the City's water customers
2	10-20%	2	In addition to the permanent water conservation requirements and Stage 1, the following requirements apply: 1. Serving of water at eating or drinking establishments upon request 2. Limits on watering days - not to exceed 2 days per week 3 Obligation to fix leaks, breaks, or malfunctions - within 48 hours of discovery 4. Vehicle washing prohibited except with specific types of hand held devices. 5. Re-filling of more than one foot and initial filling of a pool or spa is prohibited. 6. Filling or re-filling of ornamental lakes or ponds is prohibited except to sustain existing aquatic life 7. Median irrigation prohibited 8. City may implement other prohibited water uses after providing notice to the City's water customers

Table 8-1 (continued)
Water Shortage Contingency Plan Levels

Submittal Table 8-1 Water Shortage Contingency Plan Levels			
Shortage Level	**Percent Shortage Range**	**Equivalent 2020 WSCP Standard Shortage Level**	**Shortage Response Actions**
3	<20%	3 thru 6	In addition to the permanent water conservation requirements and Stage 1 and Stage 2 requirements, the folowing requirements apply: 1. All irrigation prohibited except fo maintenance of vegetation using hand held devices or very-low flow drip type systems, landscape needed for fire protection or soil erosion, plant materials identified as rare or needed for wellbeing of animals, landscape of active parks, active irrigated environmental mitigation projects 2 Obligation to fix leaks, breaks, or malfunctions - within 24 hours of discovery 3.City may discontinue service to customers who violate provisions of declared Level 3 water supply shortage 4. No new annexatioins 5. City may implement other prohibited water uses after providing notice to the City's water customers

Table 8-2
Demand Reduction Actions

Submittal Table 8-2: Demand Reduction Actions				
Shortage Level	**Demand Reduction Actions**	**How much is this going to reduce the shortage gap?**	**Additional Explanation or Reference *(optional)***	**Penalty, Charge, or Other Enforcement?**
Level 1	Landscape - Limit landscape irrigation to specific days	Up to 10%	Limited to 3 days per week (Tuesday, Thursday, & Saturday)	Yes
	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner		Repair all leaks and/or breaks within 72 hours	Yes
	Water Features - Restrict water use for decorative water features, such as fountains		Filling or re-filling of ornamental lakes or ponds is prohibited except to sustain existing aquatic life.	Yes
	Other		City may implement other prohibited water uses after providing notice to the City's water customers.	Yes
Level 2	CII - Restaurants may only serve water upon request	10-20%		Yes
	Landscape - Limit landscape irrigation to specific days		Limited to 2 days per week (Tuesday & Saturday)	Yes
	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner		Repair all leaks and/or breaks within 48 hours	Yes
	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water			Yes
	Other water feature or swimming pool restriction		Re-filling of more than one foot and initial filling is prohibited.	Yes
	Water Features - Restrict water use for decorative water features, such as fountains		Filling or re-filling of ornamental lakes or ponds is prohibited except to sustain existing aquatic life.	Yes
	Landscape - Prohibit certain types of landscape irrigation		Median irrigation prohibited.	Yes
	Other		City may implement other prohibited water uses after providing notice to the City's water customers.	Yes

Table 8-2 (continued)
Demand Reduction Actions

Submittal Table 8-2: Demand Reduction Actions				
Shortage Level	**Demand Reduction Actions**	**How much is this going to reduce the shortage gap?**	**Additional Explanation or Reference *(optional)***	**Penalty, Charge, or Other Enforcement?**
Level 3	Landscape - Prohibit all landscape irrigation	>20%	Exceptions: maintenance of vegetation using hand held devices or very-low flow drip type systems, landscape needed for fire protection or soil erosion, plant materials identified as rare or needed for wellbeing of animals, landscape of active parks, active irrigated environmental mitigation projects	Yes
	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner		Repair all leaks and/or breaks within 24 hours	Yes
	Other		City may discontinue service to customers who violate provisions of declared Level 3 water supply shortage	Yes
	Other		No new annexations	Yes
	Other		City may implement other prohibited water uses after providing notice to the City's water customers.	Yes

SECTION 9

DEMAND MANAGEMENT MEASURES

9-1 General

The Urban Water Management Plan (UWMP) Act requires a water supplier to describe the demand management measures (DMM) being implemented to achieve its urban water use targets. In 2014, the UWMP Act was amended to reorganize the original 14 specific DMMs into six more general requirements plus an "other" category for retail agencies. The updated retail DMMs include: (1) water waste prevention ordinances, (2) metering, (3) conservation pricing, (4) public educationand outreach, (5) programs to assess and manage distribution system real loss, (6) water conservation program coordination and staffing support, and (7) other DMMs that have a significant impact on water use. This section describes the DMMs that the City has implemented, is currently implementing, and plans to implement in order to manage demands in its service area and continue to meet its urban water use reduction targets.

9-2 Waste Water Prevention Ordinance

As part of its commitment to conserve water, the City implements various water programs and ordinances that obligate its customers to reduce water consumption. The City's Municipal Code Chapter 13.03, Water Conservation Program, Sections 13.03.040 through 13.03.80 include permanent water use restrictions, as well as progressive water use restrictions that are activated based on anticipated water supply shortages.

Permanent water use restrictions and exemptions to permanent restrictions are:

A. Automated Watering (Irrigation) System Operation:

1. Automated watering or irrigation of any lawn, landscape, or other vegetated area with potable water is prohibited between the hours of 9:00 a.m. and 4:00 p.m. Pacific Standard Time on any day. Automated landscape irrigation systems may nevertheless be operated during these hours for very short periods of time, such as ten minutes, for the express purpose of adjusting or repairing a landscape irrigation system.

2. Automated Watering Duration Limits.

   a. High Flow Sprinkler Heads (Greater than two gallons per minute). All watering activities are required to avoid visible runoff or pooling on adjacent hard surfaces. Automated sprinkler heads with flow rates greater than two gallons per minute may be operated up to a maximum of ten minutes (per valve station) on each authorized day so long as no visible runoff or pooling occurs. If runoff or pooling is visible, the sprinkler station run time shall be further reduced to eliminate runoff and pooling. Watering is prohibited from 9:00 a.m. to 4:00 p.m. daily.

   b. Low Flow Sprinkler/Rotator Heads (Less than two gallons per minute). All watering activities are required to avoid visible runoff and pooling on adjacent hard surfaces. Automated sprinkler heads with flow rate less than two gallons per minute may be operated up to a maximum of twenty minutes (per valve station) on each authorized day so long as no visible runoff or pooling occurs. If runoff is visible, the sprinkler station run time shall be further reduced to eliminate runoff and pooling. Watering is prohibited from 9:00 a.m. to 4:00 p.m. daily.

c. Drip Watering Systems (Less than two gallons per hour). Properly installed automated drip systems with flow rates less than two gallons per hour are exempt from day and duration limitations so long as no visible runoff or pooling is created. Watering is prohibited from 9:00 a.m. to 4:00 p.m. daily.

B. Handheld Watering of Lawn, Tree and Vegetable Gardens: All watering activities are required to avoid visible runoff on adjacent hard surfaces. Use of a handheld bucket or similar container, a hand-held hose equipped with a positive self-closing water shut off nozzle or device is exempt from day, time of day and duration limitations. Vegetable gardens may be watered by hand or with soaker hoses without day, time of day and duration limitations. Trees may be watered by hand, soaker hose under the drip-line of the tree canopy or with automatic tree bubblers without limitation.

C. No Excessive Water Flow or Runoff or Pooling: Any watering; irrigating of any lawn, landscape or area with vegetation; or any other use of water in a manner that causes or results in excessive water flow, runoff or pooling onto an adjoining surfaces, including but not limited to sidewalks, walkways, driveways, parking areas, streets, alleys, gutters, or ditches is prohibited.

D. Washing Down Hard or Paved Surfaces Prohibited: Washing of driveways, sidewalks, parking areas, patios, other outdoor impermeable surface areas, kitchens or objects, such as kitchen non-skid mats with a hose, is prohibited unless using a water-conserving pressurized cleaning device as defined herein. A water-conserving pressurized cleaning device is defined as a device that discharges water at a minimum of one thousand pounds per square inch or a device that has been rated at using less than three gallons of water per minute. A simple spray nozzle does not qualify as a water-conserving pressurized cleaning device.

E. Obligation to Fix Leaks, Breaks, or Malfunctions: Excessive use, loss, or escape of water through leaks, breaks, or other malfunctions in the water user's plumbing or distribution system for any period of time after such escape of water should have reasonably been discovered and corrected and in no event more than seven days of receiving notice from the city is prohibited.

F. Re-circulating Required for Water Fountains and Decorative Water Features: Operating a water fountain or other decorative water feature that does not use re-circulated water is prohibited.

G. Limits on Washing Vehicles: Using water to wash or clean a vehicle, including but not limited to any automobile, motorcycle, truck, van, bus, recreational vehicle, boat or trailer, camping or cargo trailer, whether motorized or not is prohibited, except by use of a hand-held bucket or similar container, or a hand-held hose equipped with a positive self-closing water shut off nozzle or device. No excessive water flow or runoff as defined in Section 13.03.040 is permitted. This provision does not apply to any commercial car washing facility.

H. Drinking Water Served Upon Request Only: Eating or drinking establishments, including but not limited to a restaurant, hotel, cafe, bar, club, or other public place where food or drinks are sold, served, or offered for sale, are prohibited from providing drinking water to any person unless expressly requested.

I. Commercial Lodging Establishments Must Provide Option to Not Launder Linen Daily: Hotels, motels, and other commercial lodging establishments must provide customers the option of not having towels and linen laundered daily. Commercial lodging establishments shall prominently display notice of this option in each bathroom using clear and easily understood language.

J. **No Installation of Single Pass Cooling System:** Installation of single pass cooling systems is prohibited in buildings requesting new water service

K. **No Installation of Non-re-circulating Commercial Car Wash and Laundry Systems.** Installation of non-re-circulating water systems is prohibited in new commercial conveyor car wash and new commercial laundry systems.

L. **Restaurants Required to Use Water Conserving Dish Wash Spray Valves:** Food preparation establishments, such as restaurants or cafes, are prohibited from using non-water conserving dish wash spray valves.

M. **Commercial Car Wash Systems:** Effective on January 1, 2011, all commercial conveyor car wash systems must have installed and operational re-circulating water systems, or must have secured an extension of this requirement from the city.

N. **Reporting Mechanism – Hotline**: The city will establish a water waste hotline for residents to report violations of this chapter. This hotline may be set-up and offered through a dedicated phone number and/or through submittal on the city's website.

O. **All automated outdoor irrigation during and within forty-eight hours following measurable rainfall is prohibited**.

P. **Exemptions to Permanent Restrictions:**

1. Watering with a hand-held hose or a refillable watering vessel, such as a bucket or a tree irrigator, is allowed at any time on any day of the week.
2. Drip irrigation systems with emitters of less than three gallons per hour capacity are exempt from run time and day restrictions due to increased efficiency.
3. Soaker hoses or automatic tree bubblers may be used to water trees so long as watering is done under the drip-line of the tree canopy.
4. Watering a vegetable garden with a soaker hose is exempt from the watering limitations.

The Municipal Code includes three (3) levels of progressive water use restrictions based on anticipated water supply delivered to the region. Currently, a Level 1 Water Supply Shortage is in effect. See Section 8-3 for details on the levels of water use restrictions.

9-3 Metering

The City's water system is fully metered and is currently in the process of beginning a meter replacement program that will span over future years. The City replaced 11 meters in 2019 and 15 meters in 2020. It is yet to be determined how many meters will be replaced each year but it is planned to keep the program ongoing.

The City implemented an Advanced Metering Infrastructure (AMI) pilot program. Initially, 260 AMI meters were installed. Although the City decided not to pursue conversion of all meters to AMI, the City has decided to move forward in purchasing digital register meters with data logging features. This will allow historical water usage to be retrieved when needed.

9-4 Conservation Pricing

The City adopted its current water rates in January 2020. The water service charges have two components – a monthly fixed charge and a volumetric usage charge, which acts as conservation pricing. The fixed

charge is based on the service meter size and customer type as shown in Table 9-1. The volumetric use charge for residential and irrigation customers is an inclining two-tier rate structure. The volumetric use charge for all other customers is an inclining three-tier rate structure. Basically, efficient water use is billed at a lower price and higher water use is billed at progressively higher prices. The volumetric use charges are shown in Table 9-2.

Table 9-1
Fixed Meter Monthly Charge by Meter Size and Customer Type

Effective Date	3/1/2020	1/1/2021	1/1/2022	1/1/2023	1/1/2024
Residential Single Family, Residential Multi-Family, Commercial, Industrial, Institutional, and Irrigation					
5/8"	$17.30	$19.90	$22.29	$23.96	$25.76
3/4"	$17.30	$19.90	$22.29	$23.96	$25.76
1"	$44.54	$51.23	$57.37	$61.68	$66.30
1.5"	$98.19	$112.92	$126.47	$135.96	$146.15
2"	$170.15	$195.67	$219.15	$235.58	$253.25
3" - 9"	$381.20	$438.39	$490.99	$527.82	$567.40
10"	$1,216.07	$1,398.48	$1,566.30	$1,683.77	$1,810.06
Residential Fire Service Meters					
2"	$81.83	$94.10	$105.39	$113.30	$121.79
4"	$161.76	$186.02	$205.35	$223.97	$240.77
6"	$243.21	$279.69	$313.26	$336.75	$362.01
8"	$307.04	$353.10	$395.47	$425.13	$457.02
10"	$307.04	$353.10	$395.47	$425.13	$457.02
Business Fire Service Meters					
2"	$138.37	$159.12	$178.22	$191.59	$205.95
4"	$307.04	$353.10	$395.47	$425.13	$457.02
6"	$307.04	$353.10	$395.47	$425.13	$457.02
8"	$307.04	$353.10	$395.47	$425.13	$457.02
10"	$307.04	$353.10	$395.47	$425.13	$457.02

Table 9-2
Water Usage Consumption Charge per Billing Unit by Tier and Customer Type

Effective Date	3/1/2020	1/1/2021	1/1/2022	1/1/2023	1/1/2024
Residential - Single Family and Multi-Family					
Tier 1 0 - 15 units	$2.94	$3.38	$3.79	$4.07	$4.38
Tier 2 > 16 units	$4.69	$5.40	$6.05	$6.50	$6.99
Commercial, Industrial, and Institutional					
Tier 1 0 - 15 units	$2.94	$3.38	$3.79	$4.07	$4.38
Tier 2 16 - 150 units	$4.69	$5.40	$6.05	$6.50	$6.99
Tier 3 > 151 units	$6.92	$7.95	$8.91	$9.58	$10.29
Irrigation					
Tier 1 0 - 15 units	$2.94	$3.38	$3.79	$4.07	$4.38
Tier 2 > 16 units	$4.47	$5.15	$5.76	$6.20	$6.66

9-5 Public Education and Outreach

In partnership with the Water Replenishment District (WRD) and Metropolitan Water District of Southern California (MWD) and its other member agencies, the City has participated in water use efficiency initiatives over the years and will continue to do so in the future. The City actively promotes using water more efficiently and eliminating water waste, in an effort to reduce water demands.

The City provides information on their water conservation program via the following sources:

1. City Website at www.cityofsignalhill.org – current restrictions are listed and links to other resources are provided
2. City Council Meetings – announcements are made about current restriction in effect
3. Local newspaper / newsletters – public service announcements are advertised
4. Water Conservation Hotline (562-989-7351) – to report violations or obtain information about restrictions and indoor and outdoor conservation tips
5. City Cable Access Channel – air current requirements and restrictions on a regular basis
6. Public Events – provide leak detection kits for toilets
7. Social Media Outlets – post water conservation related information

9-6 Programs to Assess and Manage Distribution System Real Loss

The City completed a water loss audit for FY 2019-2020. It was found that non-revenue water as a percent of volume of the water supplied was 10.2 percent. See Section 4-5 for more details on the water loss audit completed. The City will continue to monitor and report on the system water loss each year.

Leak checks are conducted at the customer's request and meter readers perform monthly visual checks on the service meters throughout the distribution system. Residents report water leaks by calling City Hall or Public Works. Once a leak has been called in and confirmed to be on the City's water system, the Water Department schedules repairs.

Some of the routine and planned system maintenance programs the City has implemented include the following:

- Service meter replacement program (see Section 9-3)
- AMI pilot program (see Section 9-3)
- Routine flushing – 4 to 5 locations per week
- Valve exercising – 3 year cycle
- Service meter accuracy testing
- Pipeline replacement program

9-7 Water Conservation Program Coordination and Staffing Support

The City does not have its own water conservation program beyond participating in the programs provided by WRD and MWD.

9-8 Other Demand Management Measures

Rebate programs are provided to the City's customers through MWD and its member agency, CBMWD. MWD offers rebates to customers within their distribution territory through its SoCal WaterSmart program. These programs include residential rebates for turf removal, high-efficiency clothes washers, high-efficiency toilets, sprinklers, rain barrels, and irrigation controllers. MWD also offers commercial rebates for such appliances as high-efficiency toilets, urinals, irrigation controllers, and sprinkler nozzles. CBMWD's rebate website includes a rebate calculator that customers can use to quantify both residential and commercial, industrial and institutional (CII) rebates in their water service area. The City provides a link to MWD's rebate programs on its website.

City customers can participate in the residential and CII rebate programs offered through MWD through the WaterSmart program. The dollar value of these rebates, as provided on the CBMWD website, is summarized in Table 9-3.

Table 9-3
Examples of Rebates Available to City Customers in 2020

Rebate	Rebate Type	Amount
High-Efficiency Clothes Washer	Residential	$85
High-Efficiency Toilet	Residential/CII	$40
Weather Based Irrigation Controller (less than 1 acre)	Residential	$80/Controller
Weather Based Irrigation Controller (more than 1 acre)	Residential/CII	$35/Station
Rotating Sprinkler Nozzles (min 30 nozzles)	Residential/CII	$2/Nozzle
Rain Barrel (50-199 gallons) (max. quantity 2)	Residential	$35
Cistern (200-500 gallons) (max quantitiy 1)	Residential	$250
Cistern (501-999 gallons) (max quantity 1)	Residential	$300
Cistern (1000+ gallons) (max quantity 1)	Residential	$350
Soil Moisture Sensor System	Residential	$80 or $35/Controller
Turf Replacement (up to 5,000 sf)	Residential/CII	$2/sf
Ultra Low and Zero Water Urinals	CII	$200
Plumbing Flow Control Valves (min of 10)	CII	$5/Valve
Large Rotary Nozzles (min 30 nozzles)	CII	$2/Nozzle
In-stem Flow Regulator (25 device min)	CII	$/Regulator
Connectionless Food Steamer	CII	$485
Air-cooled Ice Machines	CII	$1,000
Cooling Tower Conductivity Controllers	CII	$625
Cooling Tower ph Controllers	CII	$1,750
Dry Vacuum Pumps	CII	$1,250/0.5HP
Laminar Flow Restrictors (min of 10)	CII	$10/Restrictor

Reference: https:/socalwatersmart.com

CII = Commercial, Industrial, and Institutional

9-9 Implementation over the Past Five years

Over the past five years, the City has implemented the following demand management measures (DMM):

- Implemented Stage 1 Shortage Conditions per the Water Conservation Plan (i.e. Water Shortage Contingency Plan) since California declared drought conditions in January 2014
- Maintained permanent water conservation requirements per its Water Conservation Plan
- Continued a meter replacement program
- Initiated an AMI pilot program
- Implemented water conservation pricing to promote efficient water use
- Continued with public education and outreach programs
- Completed water audits for FY 2017, 2018, and 2019
- Continued to keep up to date on CBMWD and MWD rebate programs and inform customers about them

9-10 Water Use Reduction Implementation Plan

The City will implement the DMMs described in this 2020 UWMP. The City has already achieved compliance with the 2020 water use target. However, this was accomplished during a period of drought and heightened water conservation messaging and enforcement. In order to ensure that the City will remain in compliance over the next five years, the City will closely monitor water use and tailor its public education and outreach program to ensure that targets continued to be met.

The 2020 WSCP was adopted by resolution of the City's City Council on November 9, 2021 following a public hearing on the same date (a copy of the resolution can be found in Appendix 10-3). The hearing provided an opportunity for all residents in the service area to learn and ask questions about the WSCP and water conservation requirements.

SECTION 10

PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

10-1 Notice Prior to Public Hearing

The agencies that received the City's Notice of Preparation and Public Hearing for its 2020 Urban Water Management Plan (UWMP) are listed in Table 10-1. As required by California Water Code (CWC) §10621 and shown in Table 10-1, these notifications were sent out more than 60 days before the public hearing for the 2020 UWMP and a copy of the notifications can be found in Appendix 10-1.

Table 10-1
Notifications to Cities and Counties

Submittal Table 10-1 Retail: Notification to Cities and Counties		
City Name	**60 Day Notice**	**Notice of Public Hearing**
Central Basin Municipal Water District (CBMWD)	Yes	Yes
Water Replenishment District (WRD)	Yes	Yes
Long Beach Water Department (LBWD)	Yes	Yes
General Public	Yes	Yes
County Name	**60 Day Notice**	**Notice of Public Hearing**
Los Angeles County	Yes	Yes
NOTES:		

10-2 Notice to the Public

A draft of the 2020 UWMP and WSCP was made publically available at the City Department of Public Works counter and on the City website on October 22, 2021. Notice of the availability of the draft 2020 UWMP and WSCP, as well as the planned public hearing was placed in the local newspaper, the Signal Tribune Newspaper, on October 22, 2021 and October 29, 2021. The notice announced that the draft 2020 UWMP and WSCP was available for public inspection at the City Department of Public Works counter and included the time and date of the public hearing. Confirmation that the public notice was posted in the local newspaper is provided in Appendix 10-2.

10-3 Public Hearing and Adoption

A public hearing to receive comments on the draft 2020 UWMP and WSCP was held at the City Hall on November 9, 2021. The Final 2020 UWMP and WSCP was adopted by the City Council on November 9, 2021 following the public hearing. A copy of the adoption resolutions are provided as Appendix 10-3 and Appendix 10-4.

The City will make any necessary amendments or "significant changes" requested by the California Department of Water Resources (DWR) until the 2020 UWMP is deemed "complete".

As part of the public hearing, the City provided information on its baseline values, water use targets, and implementation plan required in the Water Conservation Act of 2009.

10-4 Plan Submittal

The 2020 UWMP and WSCP will be submitted to California Department of Water Resources (DWR) electronically through the Water Use Efficiency (WUE) Data Portal, an online submittal tool, within 30 days of adoption.

An electronic copy (on CD) of the 2020 UWMP and WSCP will be submitted to the California State Library within 30 days of adoption.

An electronic copy of the 2020 UWMP and WSCP will be submitted to the City and County within 30 days of submitting the plans to DWR.

10-5 Public Availability

No later than 30 days after adoption, a copy of the final 2020 UWMP and WSCP will be made publically available at the City Department of Public Works counter during normal business hours and on the City website:

https://www.cityofsignalhill.org/22/Water

10-6 Amending an Adopted UWMP or WSCP

If the adopted 2020 UWMP is amended in the future, each of the steps for notification, public hearing, adoption, and submittal will also be followed for the amended plan.

If the WSCP is revised after DWR has approved the 2020 UWMP, a copy of the revised WSCP will be submitted to DWR through the WUE Data Portal within 30 days of its adoption.