2015

URBAN WATER MANAGEMENT PLAN

FINAL

Updated May 2017

2015 URBAN WATER MANAGEMENT PLAN

City of Norwalk

FINAL

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ACRONYMS AND ABBREVIATIONS

20 by 2020	20% water use reduction in GPCD by year 2020
Act	Urban Water Management Planning Act
AF	Acre-Feet
AFY	Acre-Feet per Year
AMR	Advanced Meter Readers
AWWA	American Water Works Association
Basin	Central Groundwater Basin
Biops	Biological Opinions
BMP	Best Management Practice
BOR	Bureau of Reclamation
CB16	Central Basin Turnout No. 16
CBMWD	Central Basin Municipal Water District
CDPH	California Department of Public Health
CFS	Cubic Feet per Second
CI	Cast Iron
CII	Commercial/Industrial/Institutional
City	City of Norwalk
CRA	Colorado River Aqueduct
CVP	Central Valley Project
Delta	Sacramento-San Joaquin River Delta
DI	Ductile Iron
DMM	Demand Management Measure
DVL	Diamond Valley Lake
DWR	Department of Water Resources
FY	Fiscal Year
Gateway IRWM	Gateway Integrated Regional Water Management
GPCD	Gallons per Capita per Day
HCF	Hundred Cubic Feet
HET	High Efficiency Toilet
IPR	Indirect Potable Reuse
IRP	Integrated Water Resource Plan
IWA	International Water Association
JWPCP	Joint Water Pollution Control Plant
LACFCD	Los Angeles County Flood Control District
LACSD	Los Angeles County Sanitation District
LRP	Local Resources Program
MAF	Million Acre-Feet
MCL	Maximum Contaminant Level
Metropolitan	Metropolitan Water District of Southern California

MGD	Million Gallons per Day
MHI	Median Household Income
NDMA	N-nitrosodimethylamine
NMWS	Norwalk Municipal Water System
PCE	Perchloroethylene
PPCP	Pharmaceuticals and Personal Care Product
RHNA	Regional Housing Needs Assessment
SBx7-7	Senate Bill 7 as part of the Seventh Extraordinary Session
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SDCWA	San Diego County Water Authority
SDP	Seawater Desalination Program
SEMS	Standardized Emergency Management System
SMSS	Soil Moisture Sensor System
Study	Colorado River Basin Water Supply and Demand Study
SWP	State Water Project
SWRCB	California State Water Resources Control Board
TCE	Trichloroethylene
UWMP	Urban Water Management Plan
VOC	Volatile Organic Compound
WBIC	Weather Based Irrigation Controller
WRD	Water Replenishment District
WRP	Water Reclamation Plant
WSAP	Water Supply Allocation Plan
WSDM	Water Surplus and Drought Management

1 INTRODUCTION

1.1 Urban Water Management Plan Requirements

Water Code Sections 10610 through 10656 of the Urban Water Management Planning Act (Act) require every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet (AF) of water annually to prepare, adopt, and file an Urban Water Management Plan (UWMP) with the California Department of Water Resources (DWR) every five years in the years ending in zero and five. The 2015 UWMP updates are due to DWR by July 1, 2016.

This UWMP provides DWR with a detailed summary of the present and future water resources and demands within the City of Norwalk's (City) service area and assesses the City's water resource needs. Specifically, the UWMP provides water supply planning for a 25-year planning period in five-year increments and identifies water supplies needed to meet existing and future demands. The demand analysis must identify supply reliability under three hydrologic conditions: a normal year, a single-dry year, and multiple-dry years. The City's 2015 UWMP updates the 2010 UWMP in compliance with the requirements of the Act as amended in 2009, and includes a discussion of:

- Water Service Area and Facilities
- Water Sources and Supplies
- Water Use by Customer Type
- Demand Management Measures
- Water Supply Reliability
- Planned Water Supply Projects and Programs
- Water Shortage Contingency Plan
- Recycled Water Use

Since the original Act's passage in 1983, several amendments have been added. The most recent changes affecting the 2015 UWMP include Senate Bill 7 as part of the Seventh Extraordinary Session (SBx7-7) and SB 1087. SBx7-7, or the Water Conservation Act of 2009, is part of the Delta Action Plan that stemmed from the Governor's goal to achieve a 20 percent statewide reduction in urban per capita water use by 2020 (20 by 2020). Reduction in water use is an important part of this plan that aims to sustainably manage the Bay Delta and reduce conflicts between environmental conservation and water supply; it is detailed in Section 3.2.2. SBx7-7 requires each urban retail water supplier to develop urban water use targets to achieve the 20 by 2020 goal and the interim ten percent goal by 2015. Each urban retail water supplier must include in its 2015 UWMPs the following information from its target-setting process:

- Baseline daily per capita water use
- 2020 urban water use target

- 2015 interim water use target compliance
- Compliance method being used along with calculation method and support data
- An implementation plan to meet the targets

The other recent amendment, made to the UWMP on September 19, 2014, is set forth by SB 1420, Distribution System Water Losses. SB 1420 requires water purveyors to quantify distribution system losses for the most recent 12-month period available. The water loss quantification is based on the water system balance methodology developed by the American Water Works Association (AWWA).

The sections in this UWMP correspond to the outline of the Act, specifically Article 2, Contents of Plans, Sections 10631, 10632, and 10633. The sequence used for the required information, however, differs slightly in order to present information in a manner reflecting the unique characteristics of the City. The UWMP Checklist has been completed, which identifies the location of Act requirements in this Plan and is included in Appendix A. This is an individual UWMP for a retail agency, as shown in Tables 1-1 and 1-2. Table 1-2 also indicates the units that will be used throughout this document.

Table 1-1: Plan Identification

Plan Identification			
Select Only One	**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:			

Table 1-2: Agency Identification

Agency Identification	
Type of Agency (select one or both)	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year (select one)	
☐	UWMP Tables Are in Calendar Years
☑	UWMP Tables Are in Fiscal Years
If Using Fiscal Years Provide Month and Date that the Fiscal Year Begins (mm/dd)	
7/1	
Units of Measure Used in UWMP (select from Drop down)	
Unit	AF
NOTES:	

1.2 Agency Overview

The City was incorporated in 1957. It is located in the Central Basin of Los Angeles County, approximately 17 miles southeast of downtown Los Angeles. The City covers approximately 9.8 square miles of land, varying in elevation from about 65 feet above sea level in the southern portion of the City to more than 120 feet above sea level at the northern border. The City is bounded by the City of Downey on the north, the City of Santa Fe Springs on the north and east, the Cities of Cerritos and Artesia on the south, and the San Gabriel River on the west (Figure 1-1).

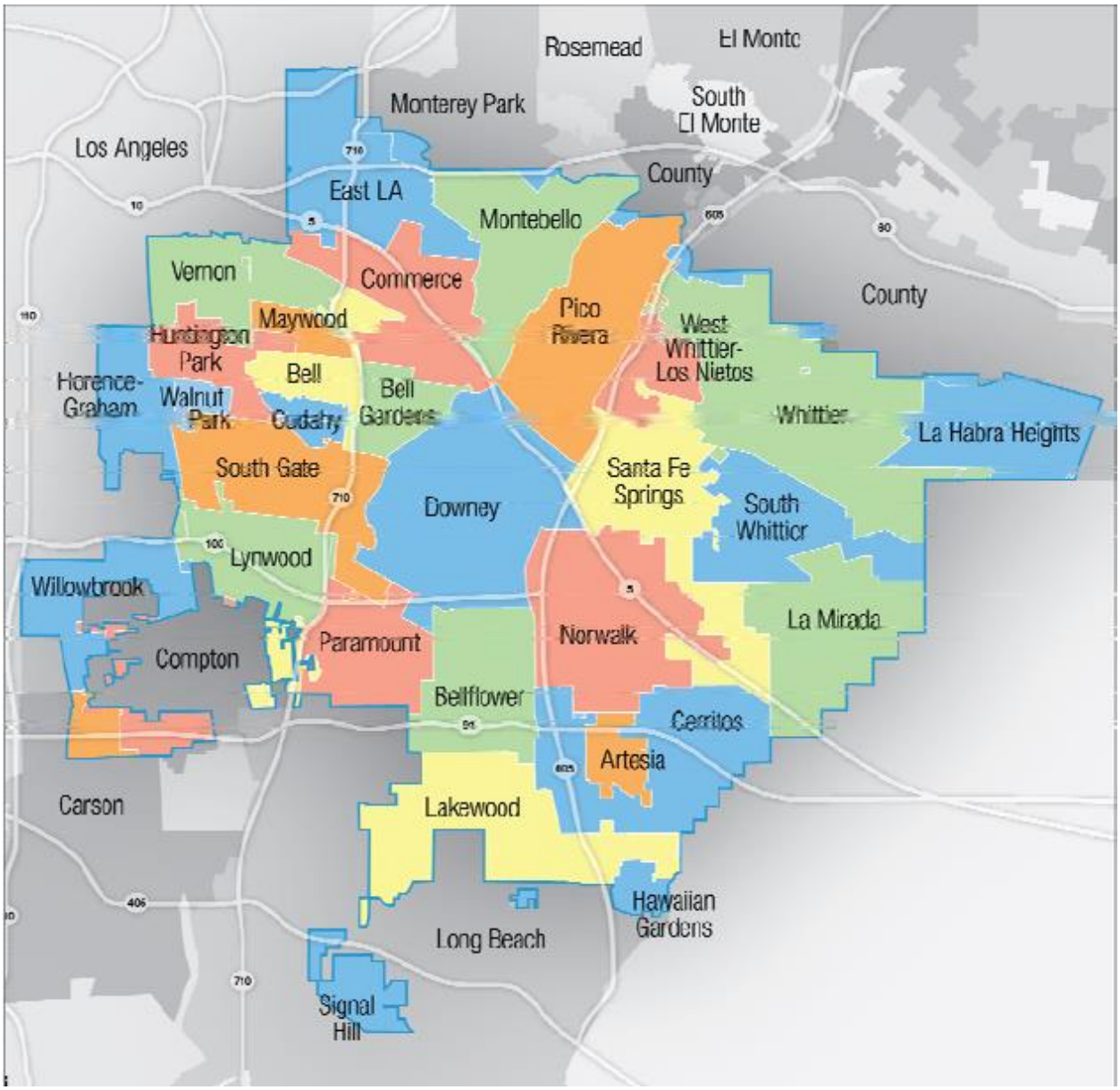

Figure 1-1: Regional Location of Urban Water Supplier

As indicated in the City's General Plan, the beginning of the development of the City's community can be traced to the establishment of Norwalk Station by the railroad in 1874, and the subsequent recording of a tract map in 1877 for the town site.

Beginning in the mid-1940s, the area encompassed by the City experienced rapid development and expansion driven by the local defense industry. This changed the area from a primarily rural agricultural area into a growing suburb. During the period from 1945 to the present, most of the area's agricultural areas were converted to homes and businesses.

The City is accessible from a network of freeways which link it to the rest of the southern California region. The Santa Ana Freeway (I-5), San Gabriel Freeway (I-605), Artesia Freeway (SR 91), and the Glenn Anderson Freeway (I-105) all pass through the City, or are located within close proximity. The City is also linked to a network of passenger and freight rail systems, including the Metropolitan Transit Authority Metro Green Line light rail, and the Metrolink commuter rail line connecting San Diego communities with a number of communities in Orange, Los Angeles, San Bernardino, and Riverside Counties.

The City is primarily a residential community, with single-family and multi-family homes representing nearly 50 percent of its total land area. Single-family housing, much of which was constructed prior to City incorporation, has been replaced in some areas by higher density apartments and condominiums. Commercial uses comprise approximately six percent of the City's incorporated land, and manufacturing and industrial uses constitute just under five percent of City territory.

The City has a five member City Council. Council members are elected at-large and serve four-year terms. The City Mayor is determined each year by a vote of the City Council. The City Manager is appointed by the City Council. Other City managerial positions are filled by the City Manager. The Public Services Director is responsible for the operation and management of the City's water system. The City Council members at the time of the Plan's adoption in 2016 were:

- Mike Mendez, Mayor
- Cheri Kelley, Vice Mayor
- Marcel Rodarte, Councilmember
- Leonard Shryock, Councilmember
- Luigi Vernola, Councilmember

The City Council members at the time of this Plan's amendment in 2017 are:

- Luigi Vernola, Mayor
- Leonard Shryock, Vice Mayor
- Tony Ayala, Councilmember
- Jennifer Perez, Councilmember
- Margarita Rios, Councilmember

Water System Overview

Due to rapid pre-incorporation growth, brought on in large part by the development of southern California defense industries prior to and during World War II, a diversity of local and neighborhood water companies were formed to serve the water needs of City residents and businesses. More specifically, this wartime population growth resulted in seven separate water companies wholesaling water to City residents by 1960.

After its incorporation in the late 1950s, the City recognizing the benefits of consolidated water distribution systems, began to consolidate the existing water facilities by purchasing them as they became available. These purchases formed the basis of the present Norwalk Municipal Water System (NMWS).

In 1959, the City received ownership and custody of the water system known as County Water Works District No. 2, from the County of Los Angeles. This water system consisted of 808 water services, two wells, an elevated storage tank, and a distribution system, which encompassed approximately 380 acres in central Norwalk.

The City then acquired Independence Square from the Suburban Water Company in 1962. This system consisted of 4-inch steel main lines and 184 water services, all of which were located in the private property of the customers served. In 1963 the City replaced all of the water lines and services with 6-inch, 8-inch, and 12-inch mains with copper services in the public right-of-way.

In 1970, the City purchased 536 water services from the City of Santa Fe Springs. With this purchase the City also obtained a distribution system north of Lakeland Road and west of Pioneer Boulevard, plus the pumping rights to 224 AF of water per year in the Central Groundwater Basin (Basin).

In the same year, the City also purchased the assets of the Junior Water Company, which was located adjacent to the old County Works District No. 2 in the center of town. The City obtained 1,187 service connections, two residential buildings, three properties, a distribution system and two wells, with water rights to pump 590 AF per year from the Basin.

When the two-part S&S Tract located at Alondra Boulevard and Wilder Avenue, and Alondra Avenue and Blackburn Avenue, was developed in 1971, the City elected to be the water purveyor. The tract encompassed 284 services and a distribution system composed of 8-inch and 12-inch asbestos cement (AC) pipes with copper or polyethylene pipe services. Water for this area is currently provided through two meters, which receive their water from the City of Cerritos through the jointly owned Norwalk/Cerritos pipe originating in Cerritos.

In 2005, the City purchased the portion of County Water Company, which is located in the southern portion of the City bordering the Cities of Cerritos and Artesia. This purchase included 456 AFY of allowed pumping allocation and 1,051 water services. In 2012, the City purchased additional water rights in the Central Groundwater Basin in the amount of 500 AFY from the City of Vernon.

1.3 Service Area and Facilities

1.3.1 City of Norwalk Service Area

The City is a retail agency of the Central Basin Municipal Water District (CBMWD). CBMWD is a member agency of the Metropolitan Water District of Southern California (Metropolitan) and is the wholesale supplier of imported water to the southeast Los Angeles County.

The City's NMWS is the water agency operated by the City and serves small portions of the Cities of Norwalk and Artesia and a small unincorporated LA County area, known to the County of LA as the "Cerritos Island". The City serves an estimated population of 19,807 through 5,359 service connections.

The City is comprised of eight distinct service areas within the City boundaries including: Northeast, Northwest, West, Central, East, Southeast, South and Artesia, as described below.

Northeast and Northwest Sector – located on the east and west sides of the Interstate-5 (I-5) Freeway south of Downey and Santa Fe Springs city boundaries. There is no direct connection between the two

sectors. The two sectors are separated by the Union Pacific railroad tracks. The existing system consists of 6-inch, 8-inch, and 12-inch AC pipe on the west side of I-5 and 4-inch, 6-inch, and 8-inch AC pipe on the east side of I-5.

Central Sector – located south of I-5; east of San Antonio Drive, Orange Street, Pioneer Boulevard, Rosecrans Ave, and Jersey Ave; north of Mapledale Street; and west of Madris Avenue and its northerly extension. The distribution system consists of 2-inch through 16-inch cast iron (CI) pipe, AC pipe, steel pipe, and ductile iron (DI) pipe. The central sector is supplied through a combination from Well 10 located in Norwalk Park and imported water through CBMWD's Turnout No. 16 (CB16) located near the southeast corner of Imperial Highway and Norwalk Boulevard.

West Sector – generally located south of Foster Road and Belcher Street; west of Fallon Avenue; north of Ruiten Street and Rosecrans Avenue; and east of Studebaker Road. The distribution system consists of 4-inch, 6-inch, and 8-inch CI pipe. The primary supply is from Well 4 (drilled in 1950) and Well 5 (drilled in 1952). Each well has a 10,000 gallon hydropneumatic tank. The sector can be supplied through a pressure regulating station from the high pressure fire pipe on Taddy Street at Sylvanwood Avenue.

Southeast Sector – located south of I-5 between Bloomfield Boulevard and Shoemaker Avenue, north of Alondra Boulevard. The westerly portion of this sector is single-family residential constructed in the mid-1970's. The easterly portion of the sector is industrial. The distribution system consists of 6-inch and 8-inch AC pipe in the residential area and 12-inch AC pipe in the industrial area. The sector is supplied with water from the City of Cerritos through one connection.

East Sector – located south of Alondra Boulevard generally between Cabrillo Avenue on the west and Carmenita Road on the east. The distribution system consists of 6-inch, 8-inch, 10-inch, and 12-inch AC pipe. The sector is supplied with water from the City of Santa Fe Springs through one connection.

Artesia Sector – located between South Street on the north and 195th Street on the south, bordered generally by Norwalk Boulevard on the west and Ely Avenue on the east. The distribution system consists of 2-inch, 6-inch, and 8-inch AC pipe. The sector is supplied with water from the City of Cerritos through one connection.

As described above, the City also serves water outside of City boundaries to portions of the City of Artesia and a small unincorporated Los Angeles County area as shown on Figure 1-3.

This UWMP represents the City's service area only. The other water service providers in the City are responsible for submitting UWMPs for their respective agency in accordance with the Act.

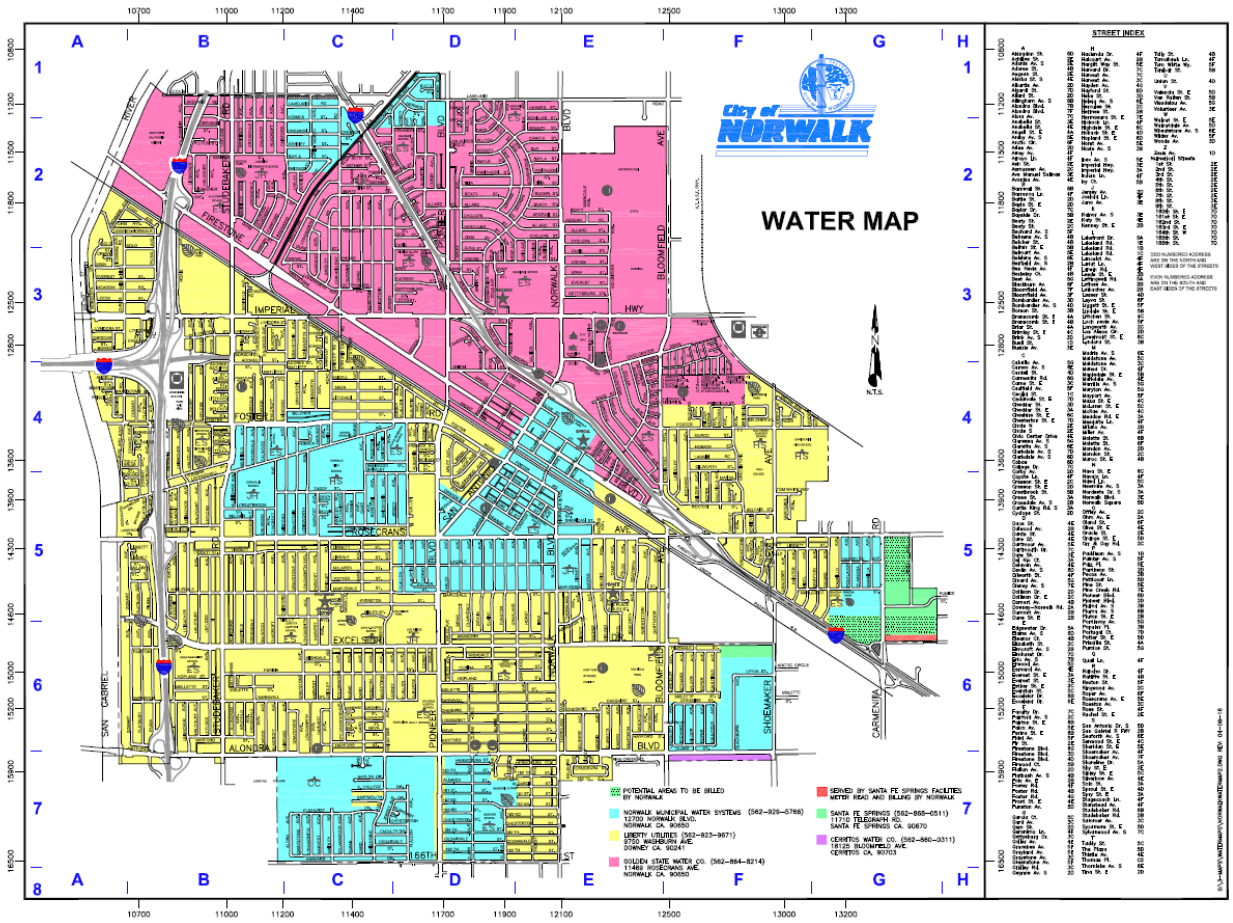

Figure 1-2: City of Norwalk Service Area

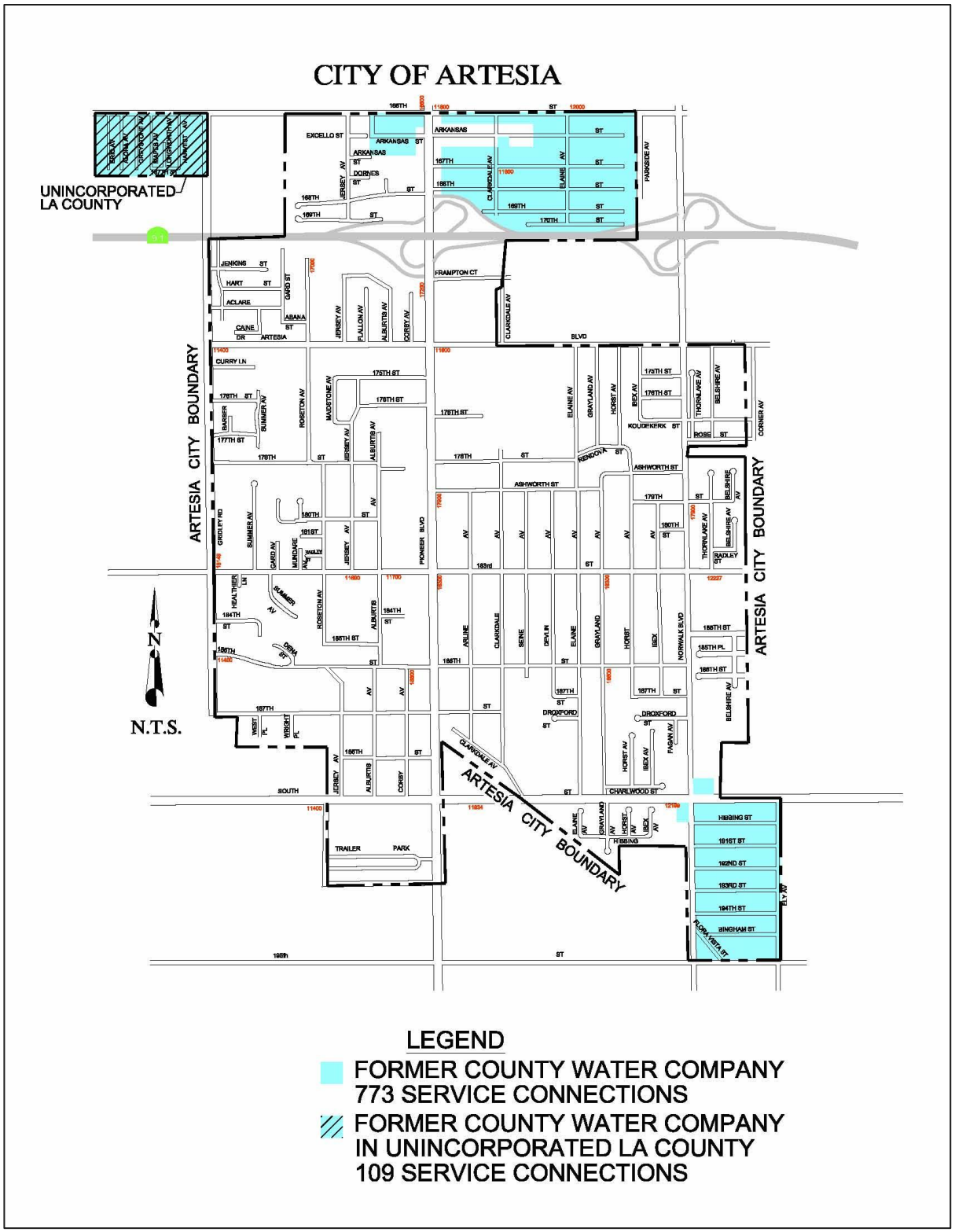

Figure 1-3: Service Area Outside of City Boundary

1.3.2 City of Norwalk Water Facilities

Currently, the City has a total of 2,273 AF per year of water rights to pump from the Basin.

The City is presently served water by five retail water agencies. These are:

- NMWS
- Liberty Utilities
- Golden State Water Company
- City of Santa Fe Springs (through NMWS)
- City of Cerritos (through NMWS)

Sources of water for these agencies include Metropolitan through CBMWD, and local wells.

The system connections and water volume supplied are summarized in Table 1-3, and the wholesalers informed of this water use as required are displayed in Table 1-4.

Table 1-3: Public Water Systems

Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
1910191	City of Norwalk	5,367	2,364
	TOTAL	5,367	2,364
NOTES:			

Table 1-4: Water Supplier Information Exchange

Retail: Water Supplier Information Exchange
The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
CBMWD
NOTES:

2 DEMANDS

2.1 Overview

Since the last UWMP update, southern California's urban water demand has been largely shaped by the efforts to comply with SBx7-7. This law requires all California retail urban water suppliers serving more than 3,000 AFY or 3,000 service connections to achieve a 20 percent water demand reduction (from a historical baseline) by 2020. The City has been actively engaged in efforts to reduce water use in its service area to meet the 2015 interim 10 percent reduction and the 2020 final water use target. Meeting this target is critical to ensure the City's eligibility to receive future state water grants and loans.

In April 2015 Governor Brown issued an Emergency Drought Mandate as a result of one of the most severe droughts in California's history, requiring a collective reduction in statewide urban water use of 25 percent by February 2016, with each agency in the state given a specific reduction target by DWR. In response to the Governor's mandate, the City is carrying out more aggressive conservation efforts. It is also implementing higher (more restrictive) stages of its water conservation ordinance in order to achieve its demand reduction target.

This section analyzes the City's current water demands by customer type, factors that influence those demands, and projections of future water demands for the next 20 years. In addition, to satisfy SBx7-7 requirements, this section provides details of the Gateway Alliance's SBx7-7 compliance method selection, baseline water use calculation, and 2015 and 2020 water use targets.

2.2 Factors Affecting Demand

Water demands within the City's service area are dependent on many factors such as local climate conditions and the evolving hydrology of the region, demographics, land use characteristics, and economics. In addition to local factors, southern California's imported water sources are also experiencing drought conditions that impact availability of current and future water supplies.

2.2.1 Climate Characteristics

The City is located within the South Coast Air Basin (SCAB) that encompasses Los Angeles, Orange County, San Bernardino, and Riverside counties. The SCAB climate is characterized by southern California's "Mediterranean" climate: a semi-arid environment with mild winters, warm summers and moderate rainfall.

Local rainfall has limited impacts on reducing demand for the City. Water that infiltrates into the soil may enter groundwater supplies depending on the local geography. However, due to the large extent of impervious cover in southern California, rainfall runoff quickly flows to a system of concrete storm drains and channels that lead directly to the ocean. Los Angeles County Department of Public Works operates stormwater capture and replenishment activities at the San Gabriel River Spreading Grounds and Rio Hondo Spreading Grounds which contribute to the Basin. Within the Gateway Alliance, replenishment of the groundwater basin occurs through recycled water and untreated imported water managed by the Water Replenishment District (WRD).

CBMWD/Metropolitan's water supplies come from the State Water Project (SWP) and the Colorado River Aqueduct (CRA), influenced by climate conditions in northern California and the Colorado River Basin, respectively. Both regions have been suffering from multi-year drought conditions with record low precipitation which directly impact water supplies to southern California.

2.2.2 Demographics

The City has a service area population of 19,807 for 2015. The City's service area population is projected to increase minimally between 2015 and 2040. The Southern California Association of Governments (SCAG) projects the population of the city of Norwalk to increase by approximately 0.4 percent, and the city of Artesia to increase by approximately 7.8 percent over the 25 period between 2015 and 2040. Since the service area includes a portion of Norwalk and Artesia, a weighted average of percent population increase was computed based on the number of connections from the Norwalk and the Artesia portions. The weighted population increase for the service area is 3.1 percent over the 25 year planning period. The service area boundary is assumed to be unchanged for the 25-year planning period. Table 2-1 shows the population projections in five-year increments out to 2040 within the City's service area.

Table 2-1: Population – Current and Projected (AF)

Retail: Population Current and Projected						
Population Served	2015	2020	2025	2030	2035	2040
	19,807	19,930	20,053	20,178	20,303	20,429
NOTES: DWR Population Tool, SCAG 2016-2040 Final Growth Forecast						

2.2.3 Land Use

The City's service area can best be described as a predominately residential single and multi-family community located in central Los Angeles County. Figure 2-1 shows a breakdown of land use within the City.

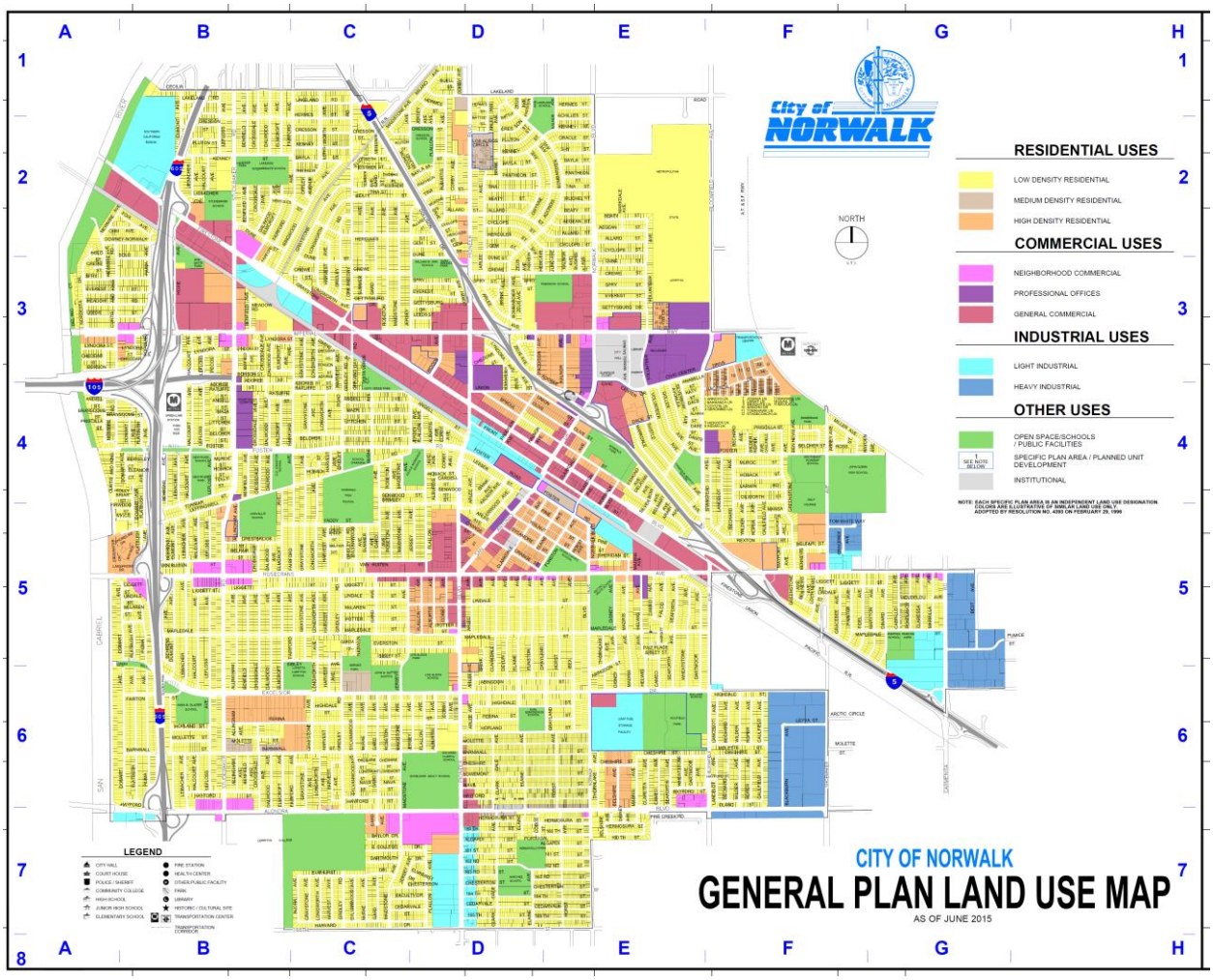

Figure 2-1: City of Norwalk General Land Use

2.3 Water Use by Customer Type

An agency's water consumption can be projected by understanding the type of use and customer type creating the demand. Developing local water use profiles helps to identify when, where, how, quantity of water used, and by whom within the agency's service area. A comprehensive profile of the agency's service area enables the impacts of water conservation efforts to be assessed and to project the future benefit of water conservation programs.

The following sections of this UWMP provide an overview of the City's water consumption by customer account type as follows:

- Single-family Residential
- Multi-family Residential
- Commercial

- Institutional/ Government

Other water uses including sales to other agencies and non-revenue water are also discussed in this section.

2.3.1 Overview

There are currently 5,367 active and inactive customer service connections in the City's water distribution system that are all metered. Approximately 91.4 percent of the City's water demand is single and multi-family residential, while the remaining 7.6 percent of total demand is comprised of commercial, institutional, and industrial use along with irrigation for dedicated landscape and agriculture.

Table 2-2 contains a summary of the City's total water demand in the fiscal year (FY) of 2014-15 for potable water volumes.

Table 2-2: Demands for Potable and Raw Water - Actual (AF)

Retail: Demands for Potable and Raw Water - Actual			
Use Type	2015 Actual		
	Additional Description	Level of Treatment When Delivered	Volume
Single Family		Drinking Water	1,987
Multi-Family		Drinking Water	100
Other	Commercial/Institutional	Drinking Water	134
Industrial		Drinking Water	31
Landscape		Drinking Water	8
Other		Drinking Water	22
Agricultural irrigation		Drinking Water	1
		TOTAL	2,282
NOTES:			

2.3.2 Non-Residential

Non-residential use includes commercial, institutional and industrial water demands. The City has a mix of commercial uses (markets, restaurants, etc.), public entities (schools, fire stations and government offices), and office complexes that account for 7.2 percent of total demand. Dedicated landscape and agricultural demand account for about 1 percent of total demand.

2.3.3 Sales to Other Agencies

The City does not sell water to other agencies.

2.3.4 Non-Revenue Water

Non-revenue water is defined by the International Water Association (IWA) as the difference between distribution systems input volume (i.e. production) and billed authorized consumption. Non-revenue water consists of three components: unbilled authorized consumption (e.g. hydrant flushing, firefighting, and

blow-off water from well start-ups), real losses (e.g. leakage in mains and service lines, and storage tank overflows), and apparent losses (unauthorized consumption, customer metering inaccuracies and systematic data handling errors).

2.3.4.1 AWWA Water Audit Methodology

There are five data categories that are part of the AWWA Water Audit: 1) Water Supplied 2) Authorized Consumption 3) Water Losses 4) System Data and 5) Cost Data. Data was compiled from questionnaires, invoices, meter test results, and discussion with the City. Each data value has a corresponding validation score that evaluates the City's internal processes associated with that data entry. The scoring scale is 1-10 with 10 representing best practice.

The *Water Supplied* section represents the volume of water the City delivered from purchased imported water and local groundwater. Validation scores for each supply source correspond to meter accuracy and how often the meters are calibrated. If the calibration results of supply meters were provided, a weighted average of errors was calculated for master meter adjustment. This adjustment factor was applied to reported supply volumes for meters that were found to register either over or under the true volume. Validity scores for meter adjustment are based on how often the meter is read and what method is used.

The *Authorized Consumption* section breaks down consumption of the volume of Water Supplied. Billed metered water is billed and delivered to customers and makes up the majority of an agency's consumption. Unbilled metered water is typically per policy and not present within the City's system. Unbilled unmetered water is authorized use that is neither billed nor metered which typically includes activities such as flushing of water mains. The AWWA Water Audit recommends using the default value of 1.25 percent to represent this use, as calculating an accurate volume is often tedious due to the many different components involved and it represents a small portion of overall use. For each consumption type listed above the associated validation score reflects utility policy for customer accounts, frequency of meter testing and replacement, computer-based billing and transition to electronic metering systems.

Water Losses are defined as the difference between the volume of water supplied and the volume of authorized consumption. Water losses are further broken down into apparent and real losses. Apparent losses include unauthorized consumption, customer meter inaccuracies and systematic data handling errors. Default percentages were provided for the Audit by AWWA for unauthorized consumption and systematic data handling error as this data is not often available. The corresponding default validation score assigned is 5 out of 10. A discrete validation score was included for customer meter inaccuracies to represent quality of meter testing records, testing procedures for meter accuracy, meter replacement cycles, and inclusion of new meter technology.

System Data includes information about the City's physical distribution system and customer accounts. The information included is: length of mains, number of active and inactive service connections, location of customer meters in relation to the property line, and the average operating pressure of the system. The number of service connections is automatically divided by the length of mains to find the service connection density of the system. The calculated service connection density determines which performance indicators best represent a water system's real loss performance. The validity scores in this section relate to the water system's policies and procedures for calculating and documenting the required system data, quality of records kept, integration with an electronic database including GIS and SCADA, and how often this data is verified.

The final section is *Cost Data* and contains three important financial values related to system operation, customer cost and water production. The total annual cost of operating the water system, customer retail unit cost and the variable production cost per AF are included. The customer retail unit value is applied to the apparent losses to determine lost revenue, while the variable production cost is typically applied to real losses. In water systems with scarce water supplies, a case can be made for real losses to be valued at the retail rate, as this volume of water could be sold to additional customers if it were not lost. Validity scores for these items consider how often audits of the financial data and supporting documents are compiled and if third-party accounting professionals are part of the process.

Calculations based on the entered and sufficiently valid data produce a series of results that help the City quantify the volume and financial impacts of water loss and facilitate comparison of The City's water loss performance with that of other water systems who have also performed water loss audits using the AWWA methodology.

The Infrastructure Leakage Index (ILI) is a performance indicator developed from the ratio of Current Annual Real Losses (CARL) to the Unavoidable Annual Real Losses (UARL). CARL was developed as part of the workbook and explained as real losses above. UARL is developed on a per system basis with an equation based on empirical data, developed by IWA that factors in the length of mains (including fire hydrant laterals), number of service connections, average distance of customer service connection piping between the curb stop and the customer meter and the total length of customer service piping, all multiplied by average system pressure.

The result of the AWWA Water Audit completed for the City as required by the 2015 UWMP is summarized in Table 2-3. The water loss summary was calculated over a one-year period from available data and the methodology explained above. A copy of the water audit is attached as Appendix G.

Table 2-3: Water Loss Audit Summary (AF)

Retail: 12 Month Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss
07/2014	151
NOTES:	

2.4 Demand Projections

Demand projections were developed internally by the City based on historical consumption data.

2.4.1 25 Year Projections

A key component of the 2015 UWMP is to provide insight into the City's future water demand outlook. The City's current total water demand is 2,104 AFY, met through locally pumped groundwater and purchased imported water from CBMWD. Table 2-4 is a projection of the City's water demand for the next 25 years.

Table 2-4: Demands for Potable and Raw Water - Projected (AF)

Retail: Demands for Potable and Raw Water - Projected						
Use Type	Additional Description	Projected Water Use				
		2020	2025	2030	2035	2040
Single Family		1,741	1,741	1,741	1,741	1,741
Multi-Family		88	88	88	88	88
Other	Commercial/Institutional	117	117	117	117	117
Industrial		27	27	27	27	27
Landscape		7	7	7	7	7
Other		19	19	19	19	19
Agricultural irrigation		1	1	1	1	1
	TOTAL	2,000	2,000	2,000	2,000	2,000
NOTES:						

The above demand values were provided by the City as part of the UWMP effort. The City will aim to decrease its reliance on imported water by pursuing a variety of water conservation strategies and with population expected to increase minimally, the City's per capita water use is projected to decrease as detailed in section 2.5 below. Table 2-5 displays the inclusion of future water savings in water use projections.

Table 2-5: Inclusion in Water Use Projections

Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections?	Yes
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc… utilized in demand projections are found.	Section 4.1
Are Lower Income Residential Demands Included In Projections?	Yes
NOTES:	

The demand data presented in this section accounts for passive savings in the future. Passive savings are water savings as a result of Codes, Standards, Ordinances, or Transportation and Land Use Plans as well as public outreach on water conservation and higher efficiency fixtures. Passive savings are anticipated to continue for the next 25 years and will result in continued water saving and reduced consumption levels.

2.4.2 Total Water Demand Projections

Based on the information provided above, the total demand for potable and recycled water is listed below in Table 2-6 below.

Table 2-6: Total Water Demands (AF)

Retail: Total Water Demands						
	2015	2020	2025	2030	2035	2040
Potable and Raw Water	2,282	2,000	2,000	2,000	2,000	2,000
Recycled Water Demand	82	90	90	90	90	90
TOTAL WATER DEMAND	2,364	2,090	2,090	2,090	2,090	2,090
NOTES:						

2.4.3 Water Use for Lower Income Households

Since 2010, the UWMP Act has required retail water suppliers to include water use projections for single-family and multi-family residential housing for lower income and affordable households. This will assist the City in complying with the requirement under Government Code Section 65589.7 granting priority for providing water service to lower income households. A lower income household is defined as a household earning below 80 percent of the median household income (MHI).

DWR recommends retail suppliers rely on the housing elements of city or county general plans to quantify planned lower income housing with the City's service area (DWR, 2015 UWMP Guidebook, February 2016). The Regional Housing Needs Assessment (RHNA) assists jurisdictions in updating general plan's housing elements section. The RHNA identifies housing needs and assesses households by income level for the City through 2010 decennial Census and 2005-2009 American Community Survey data. The fifth cycle of the RHNA covers the planning period of October 2013 to October 2021. The Southern California Association of Governments (SCAG) adopted the RHNA Allocation Plan for this cycle on October 4, 2012 requiring housing elements updates by October 15, 2013. The California Department of Housing and Community Development reviewed the housing elements data submitted by jurisdictions in the SCAG region and concluded the data meets statutory requirements for the assessment of current housing needs.

The housing elements from the RHNA includes low income housing broken down into three categories: extremely low (less than 30 percent MHI), very low (31 percent - 50 percent MHI), and lower income (51 percent - 80 percent MHI). The report gives the household distribution for all households of various income levels in the City which can be seen in Table 2-7. The RHNA household distribution breakdown is not available based on water service area but instead using City-wide income data. Altogether the City has 34.04 percent low income housing (SCAG, RHNA, November 2013).

Table 2-7: Household Distribution Based on Median Household Income

Number of Households by Income	
Extremely Low Income	2,509
Very Low Income	2,352
Lower Income	3,713
Moderate Income	5,504
Above Income	11,113
Total Households	***25,191***

Table 2-8 provides the projected water needs for low income single-family and multi-family units. The projected water demands shown here represent 34.04 percent of the projected water demand for the single-family and multi-family categories provided in Table 2-4 above. For example, the total low income single family residential demand is projected to be 593 AFY in 2020 and 2040.

Table 2-8: Projected Water Demands for Housing Needed for Low Income Households (AF)

Water Use Sector	Fiscal Year Ending				
	2020	2025	2030	2035	2040
Total Residential Demand	1,829	1,829	1,829	1,829	1,829
SF Residential Demand-Low Income Households	593	593	593	593	593
MF Residential Demand-Low Income Households	30	30	30	30	30
Total Low Income Households Demand	***623***	***623***	***623***	***623***	***623***

2.5 SBx7-7 Requirements

The Water Conservation Act of 2009, SBx7-7, signed into law on February 3, 2010, requires the State of California to reduce urban water use by 20 percent by the year 2020. The City must determine baseline water use during their baseline period and water use targets for the years 2015 and 2020 to meet the state's water reduction goal. The City may choose to comply with SBx7-7 individually or as a region in collaboration with other retail water suppliers in Los Angeles County. Under the regional compliance option, the City is still required to report its individual water use targets. The City is required to be in compliance with SBx7-7 either individually or as part of the alliance, or demonstrate they have a plan or have secured funding to be in compliance, in order to be eligible for water related state grants and loans on or after July 16, 2016.

For the 2015 UWMP, the City must demonstrate compliance with its 2015 water use target to indicate whether or not they are on track to meeting the 2020 water use target. The City also revised their baseline per capita water use calculations using 2010 U.S. Census data. Changes in the baseline calculations also result in updated per capita water use targets.

DWR also requires agencies to submit SBx7-7 Verification Forms, a set of standardized tables to demonstrate compliance with the Water Conservation Act in this 2015 UWMP.

2.5.1 Baseline Water Use

The baseline water use is the City's gross water use divided by its service area population, reported in gallons per capita per day (GPCD). Gross water use is a measure of water that enters the distribution system of the supplier over a 12-month period with certain allowable exclusions. These exclusions are:

- Recycled water delivered within the service area
- Indirect recycled water
- Water placed in long term storage
- Water conveyed to another urban supplier
- Water delivered for agricultural use
- Process water

Water suppliers must report baseline water use for two baseline periods, the 10- to 15-year baseline (baseline GPCD) and the five-year baseline (target confirmation) as described below.

2.5.1.1 Ten to 15-Year Baseline Period (Baseline GPCD)

The first step to calculating the City's water use targets is to determine its base daily per capita water use (baseline water use). This baseline water use is essentially the City's gross water use divided by its service area population, reported in GPCD. The baseline water use is calculated as a continuous (rolling) 10-year average during a period, which ends no earlier than December 31, 2004 and no later than December 31, 2010. Water suppliers whose recycled water made up 10 percent or more of their 2008 retail water delivery can use up to a 15-year average for the calculation. Recycled water use was less than 10 percent of the City's retail delivery in 2008; therefore, a 10-year baseline period is used.

The City's baseline water use is 103 GPCD, obtained from the 10-year period calendar year 2001 to calendar year 2010.

2.5.1.2 Five-Year Baseline Period (Target Confirmation)

Water suppliers are required to calculate water use, in GPCD, for a five-year baseline period. This number is used to confirm that the selected 2020 target meets the minimum water use reduction requirements. Regardless of the compliance option adopted by the City, it will need to meet a minimum water use target of 5 percent reduction from the five-year baseline water use. This five-year baseline water use is calculated as a continuous five-year average during a period, which ends no earlier than

December 31, 2007 and no later than December 31, 2010. The City's five-year baseline water use is 107 GPCD, obtained from the five-year period calendar year 2006 to calendar year 2010.

2.5.1.3 Service Area Population

The DWR Population Tool was used to estimate the City's historical service area population. DWR Population Tool provides an estimate based on electronic maps of the water supplier's service area or public water system boundaries from 1990, 2000, and 2010 as KML files in addition to the number of residential connection from 1990, 2000, 2010, and 2015. As described in Section 1.3.1, the City's service area also includes a portion of the city of Artesia and an unincorporated area of Los Angeles County acquire through the purchase of County Water Company in 2005. In 2006, a portion of County Water Company was sold to Bellflower (780 connections) resulting in a reduction in service area and in population. The total service area was estimated using the Water Boundary Tool obtained from the California Environmental Health Tracking Program website (www.cehtp.org) and Figure 1-3.

2.5.2 SBx7-7 Water Use Targets

In the 2015 UWMP, the City may update its 2020 water use target by selecting a different target method than what was used in 2010. The target methods and determination of the 2015 and 2020 targets are described below.

2.5.2.1 SBx7-7 Target Methods

DWR has established four target calculation methods for urban retail water suppliers to choose from. The City is required to adopt one of the four options to comply with SBx7-7 requirements. The four options include:

- *Option 1* requires a simple 20 percent reduction from the baseline by 2020 and 10 percent by 2015.
- *Option 2* employs a budget-based approach by requiring an agency to achieve a performance standard based on three metrics
    - Residential indoor water use of 55 GPCD
    - Landscape water use commensurate with the Model Landscape Ordinance
    - 10 percent reduction in baseline commercial/industrial/institutional (CII) water use
- *Option 3* is to achieve 95 percent of the applicable state hydrologic region target as set forth in the State's 20 by 2020 Water Conservation Plan.
- *Option 4* requires the subtraction of Total Savings from the baseline GPCD:
    - Total savings includes indoor residential savings, meter savings, CII savings, and landscape and water loss savings.

The City selected to comply with Option 3 consistent with the option selected in 2010.

2.5.2.2 2015 and 2020 Targets

Under Compliance Option 3, the City's 2015 target would be 142 GPCD. However, the City's ten-year baseline is 103 GPCD and it needs to meet a minimum water reduction and sets a target that is equivalent to 95 percent of its five-year baseline. The City's five-year baseline is 107 GPCD; based on this value the 2020 target for the City is 102 GPCD and the 2015 interim target is 103 GPCD as summarized in Table 2-9. The 2015 target is the midway value between the 10-year baseline and the confirmed 2020 target. In addition, the confirmed 2020 target needs to meet a minimum of 5 percent reduction from the five-year baseline water use.

Table 2-9: Baselines and Targets Summary

Baselines and Targets Summary *Retail Agency*					
Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	*2001*	*2010*	*103*	*103*	*102*
5 Year	*2006*	*2010*	*107*		
*All values are in Gallons per Capita per Day (GPCD)					
NOTES:					

Table 2-10 compares the City's 2015 water use target to its actual 2015 consumption. Based on this comparison, the City is in compliance with its 2015 interim target and is on track to meeting the 2020 water use target.

Table 2-10: 2015 Compliance

2015 Compliance *Retail Agency*		
Actual 2015 GPCD*	2015 Interim Target GPCD*	Did Supplier Achieve Targeted Reduction for 2015? Y/N
103	103	Yes
**All values are in Gallons per Capita per Day (GPCD)*		
NOTES:		

2.5.3 Regional Alliance

A retail supplier may choose to meet the SBx7-7 targets on its own or it may form a regional alliance with other retail suppliers to meet the water use target as a region. Within a Regional Alliance, each retail water supplier will have an additional opportunity to achieve compliance under both an individual target and a regional target.

- If the Regional Alliance meets its water use target on a regional basis, all agencies in the alliance are deemed compliant.

- If the Regional Alliance fails to meet its water use target, each individual supplier will have an opportunity to meet their water use targets individually.

The City is a member of the Gateway Regional Alliance formed by the Gateway Integrated Regional Water Management (Gateway IRWM) group. This regional alliance consists of 12 retail agencies as described in CBMWD's 2015 UWMP. The regional water use target is the weighted average of the individual retail agencies' targets (by population). The Gateway Regional Alliance ten-year baseline is 128 GPCD; the weighted 2015 target is 120 GPCD and the 2020 target is 111 GPCD. The actual 2015 water use in the region is 102 GPCD, i.e. the region is in compliance with the 2015 GPCD goal and on track to meeting the 2020 goal as shown in Table 2-11.

Table 2-11: Gateway Regional Alliance Baseline 2015 Compliance

2015 Compliance *Regional Alliance*		
Actual 2015 GPCD	2015 Interim Target GPCD	Did Supplier Achieve Targeted Reduction for 2015? Y/N
102	120	Yes
**All values are in Gallons per Capita per Day (GPCD)*		
NOTES:		

3 WATER SOURCES AND SUPPLY RELIABILITY

3.1 Overview

The City relies on a combination of imported water, local groundwater, and recycled water to meet its water needs. The City works together with Metropolitan and CBMWD to ensure a safe and reliable water supply that will continue to serve the community in periods of drought and shortage. The sources of imported water supplies include the Colorado River and the SWP provided by Metropolitan and delivered through CBMWD, the City of Cerritos, and the City of Santa Fe Springs. .

The City has service connections within its service boundaries as well as in portions of the City of Artesia and a small unincorporated Los Angeles County Area. Existing water system facilities include 55.3 miles of distribution water mains, three operating groundwater wells, seven connections with the City of Santa Fe Springs and City of Cerritos, one imported water connection, nine emergency interconnections, five pressure regulating stations, and 5,367 service connections. The City's service area covers 1,331 acres and includes nine non-contiguous areas: the Northeast, Northwest, Central, West, East, South, and Southeast (2 areas), and Artesia (Norwalk, Water Master Plan, June 2014).

The City's main source of water supply is currently imported water. However it is projected that by 2040, the water supply mix will change so that local groundwater will be the main source of water supply. The City's projected water supply portfolio is shown on Figure 3-1.

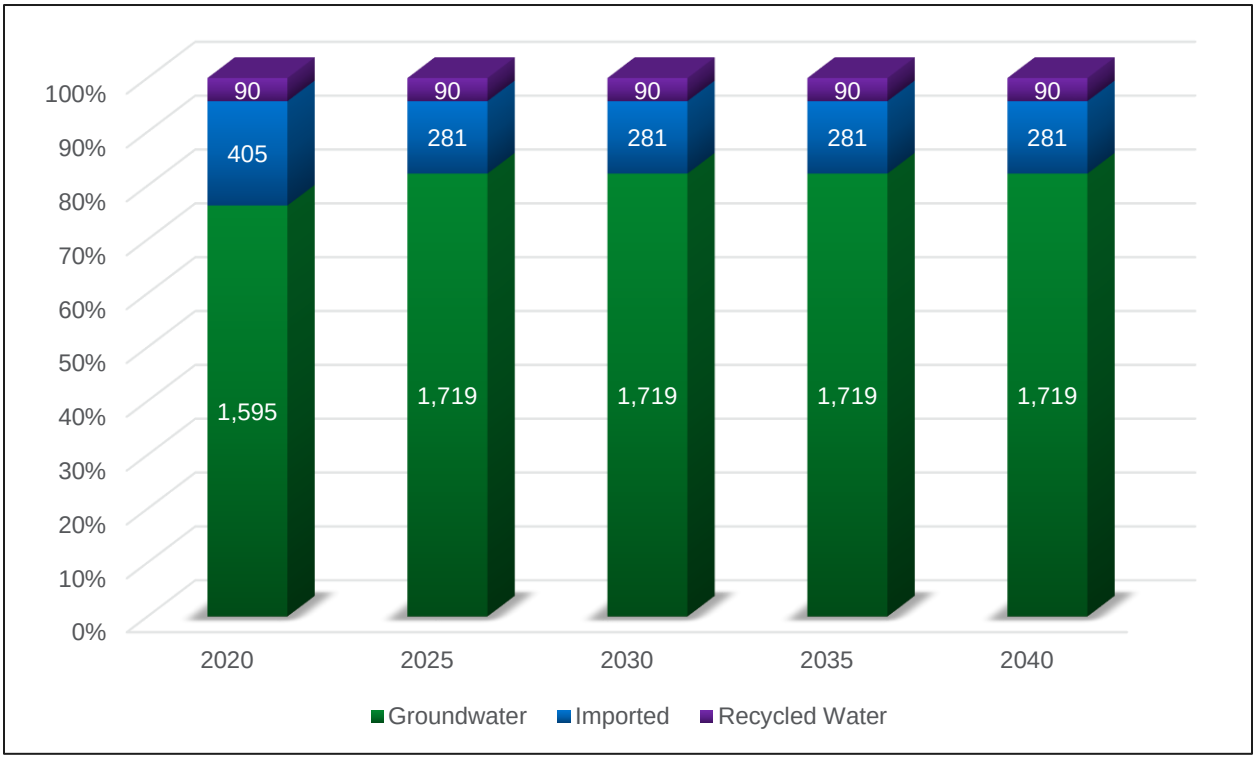

Figure 3-1: Water Supply Sources (AF)

The following sections provide a detailed discussion of the City's water sources as well as the future water supply portfolio for the next 25 years. Additionally, the City's projected supply and demand under various hydrological conditions are compared to determine the City's supply reliability for the 25 year planning horizon.

3.2 Imported Water

The City purchases water from various sources including CBMWD, the City of Santa Fe Springs, and the City of Cerritos. In 2015, the City relied on 1,323 AFY of imported water. Imported water represents approximately 56 percent of the City's total water supply. Metropolitan's principal sources of water originate from two sources - the Colorado River via the Colorado Aqueduct and the Lake Oroville watershed in Northern California through the SWP. The City's goal is to rely less on imported water in the future to increase the reliability of their water supply and due to increasing imported water prices.

Turnout No. 16 is the only imported water connection the City has with CBMWD. It is located at the intersection of Norwalk Boulevard and Imperial Highway. Water is conveyed from Metropolitan to the City through a 16-inch pipeline that travels south in Norwalk Boulevard to San Antonio Drive and then west in Rosecrans Avenue (Norwalk, Water Master Plan, June 2014).

3.2.1 Colorado River Supplies

The Colorado River was Metropolitan's original source of water after Metropolitan's establishment in 1928. The CRA, which is owned and operated by Metropolitan, transports water from the Colorado River to its terminus at Lake Mathews in Riverside County. The actual amount of water per year that may be conveyed through the CRA to Metropolitan's member agencies is subject to the availability of Colorado River water for delivery.

The CRA includes supplies from the implementation of the Quantification Settlement Agreement and related agreements to transfer water from agricultural agencies to urban uses. The 2003 Quantification Settlement Agreement enabled California to implement major Colorado River water conservation and transfer programs, stabilizing water supplies for 75 years and reducing the state's demand on the river to its 4.4 MAF entitlement. Colorado River transactions are potentially available to supply additional water up to the CRA capacity of 1.25 million acre-feet (MAF) on an as-needed basis. Water from the Colorado River or its tributaries is available to users in California, Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming, as well as to Mexico. California is apportioned the use of 4.4 MAF of water from the Colorado River each year plus one-half of any surplus that may be available for use collectively in Arizona, California, and Nevada. In addition, California has historically been allowed to use Colorado River water apportioned to but not used by Arizona or Nevada. Metropolitan has a basic entitlement of 550,000 AFY of Colorado River water, plus surplus water up to an additional 662,000 AFY when the following conditions exists (Metropolitan, 2015 UWMP, June 2016):

- Water unused by the California holders of priorities 1 through 3
- Water saved by the Palo Verde land management, crop rotation, and water supply program
- When the U.S. Secretary of the Interior makes available either one or both:
    - Surplus water is available

- Colorado River water is apportioned to but unused by Arizona and/or Nevada

Unfortunately, Metropolitan has not received surplus water for a number of years. The Colorado River supply faces current and future imbalances between water supply and demand in the Colorado River Basin due to long term drought conditions. Over the past 16 years (2000-2015), there have only been three years when the Colorado River flow has been above average (Metropolitan, 2015 UWMP, May 2016). The long-term imbalance in future supply and demand is projected to be approximately 3.2 MAF by the year 2060.

Approximately 40 million people rely on the Colorado River and its tributaries for water with 5.5 million acres of land using Colorado River water for irrigation. Climate change will also affect future supply and demand as increasing temperatures may increase evapotranspiration from vegetation along with an increase in water loss due to evaporation in reservoirs, therefore reducing the available amount of supply from the Colorado River and exacerbating imbalances between increasing demands from rapid growth and decreasing supplies.

The Colorado River Basin Water Supply and Demand Study (Study) assessed the historical water supply in the Colorado River Basin through two historical streamflow data sets, from the year 1906 through 2007 and the paleo-reconstructed record from 762 through 2005. The following are findings from the study:

- Increased temperatures in both the Upper and Lower Colorado River Basins since the 1970s has been observed.
- Loss of springtime snowpack was observed with consistent results across the lower elevation northern latitudes of the western United States. The large loss of snow at lower elevations strongly suggest the cause is due to shifts in temperature.
- The deficit between the two year running average flow and the long-term mean annual flow that started in the year 2000 is more severe than any other deficit in the observed period, at nine years and 28 MAF deficit.
- There are deficits of greater severity from the longer paleo record compared to the period from 1906 through 2005. One deficit amounted to 35 MAF through a span of 16 years.
- A summary of the trends from the observed period suggest declining stream flows, increases in variability, and seasonal shifts in streamflow that may be related to shifts in temperature.

Findings concerning the future projected supply were obtained from the Downscaled General Circulation Model projected scenario as the other methods did not consider the impacts of a changing climate beyond what has occurred historically. These findings include:

- Increased temperatures are projected across the Colorado River Basin with larger changes in the Upper Basin than in the Lower Basin. Annual Basin-wide average temperature is projected to increase by 1.3 degrees Celsius over the period through 2040.
- Projected seasonal trends toward drying are significant in certain regions. A general trend towards drying is present in the Colorado River Basin, although increases in precipitation are projected for some higher elevation and hydrologically productive regions. Consistent and expansive drying conditions are projected for the spring and summer months throughout the Colorado River Basin, although some areas in the Lower Basin are projected to experience slight increases in precipitation,

which is thought to be attributed to monsoonal influence in the region. Upper Basin precipitation is projected to increase in the fall and winter, and Lower Basin precipitation is projected to decrease.

- Snowpack is projected to decrease due to precipitation falling as rain rather than snow and warmer temperatures melting the snowpack earlier. Areas where precipitation does not change or increase is projected to have decreased snowpack in the fall and early winter. Substantial decreases in spring snowpack are projected to be widespread due to earlier melt or sublimation of snowpack.
- Runoff (both direct and base flow) is spatially diverse, but is generally projected to decrease, except in the northern Rockies. Runoff is projected to increase significantly in the higher elevation Upper Basin during winter but is projected to decrease during spring and summer.

The following future actions must be taken to implement solutions and help resolve the imbalance between water supply and demand in areas that use Colorado River water (U.S. Department of the Interior Bureau of Reclamation, Colorado River Basin Water Supply and Demand Study, December 2012):

- Resolution of significant uncertainties related to water conservation, reuse, water banking, and weather modification concepts.
- Costs, permitting issues, and energy availability issues relating to large-capacity augmentation projects need to be identified and investigated.
- Opportunities to advance and improve the resolution of future climate projections should be pursued.
- Consideration should be given to projects, policies, and programs that provide a wide-range of benefits to water users and healthy rivers for all users.

3.2.2 State Water Project Supplies

The SWP consists of a series of pump stations, reservoirs, aqueducts, tunnels, and power plants operated by DWR and is an integral part of the effort to ensure that business and industry, urban and suburban residents, and farmers throughout much of California have sufficient water. The SWP is the largest state-built, multipurpose, user-financed water project in the United States. Nearly two-thirds of residents in California receive at least part of their water from the SWP with approximately 70 percent of SWP's contracted water supply going to urban users and 30 percent to agricultural users. The primary purpose of the SWP is to divert and store water during wet periods in Northern and Central California and distribute it to areas of need in Northern California, the San Francisco Bay area, the San Joaquin Valley, the Central Coast, and southern California.

The availability of water supplies from the SWP can be highly variable. A wet water year may be followed by a dry or critically dry year and fisheries issues can restrict the operations of the export pumps even when water supplies are available.

The Sacramento-San Joaquin River Delta (Delta) is key to the SWP's ability to deliver water to its agricultural and urban contractors. All but five of the 29 SWP contractors receive water deliveries below the Delta (pumped via the Harvey O. Banks or Barker Slough pumping plants). However, the Delta faces many challenges concerning its long-term sustainability such as climate change posing a threat of increased variability in floods and droughts. Sea level rise complicates efforts in managing salinity levels

and preserving water quality in the Delta to ensure a suitable water supply for urban and agricultural use. Furthermore, other challenges include continued subsidence of Delta islands, many of which are below sea level, and the related threat of a catastrophic levee failure as the water pressure increases, or as a result of a major seismic event.

Ongoing regulatory restrictions, such as those imposed by federal biological opinions (Biops) on the effects of SWP and the federal Central Valley Project (CVP) operations on certain marine life, also contributes to the challenge of determining the SWP's water delivery reliability. In dry, below-normal conditions, Metropolitan has increased the supplies delivered through the California Aqueduct by developing flexible CVP/SWP storage and transfer programs. The goal of the storage/transfer programs is to develop additional dry-year supplies that can be conveyed through the available Harvey O. Banks pumping plant capacity to maximize deliveries through the California Aqueduct during dry hydrologic conditions and regulatory restrictions. In addition, the California State Water Resources Control Board (SWRCB) has set water quality objectives that must be met by the SWP including minimum Delta outflows, limits on SWP and CVP Delta exports, and maximum allowable salinity level.

Metropolitan's Board approved a Delta Action Plan in June 2007 that provides a framework for staff to pursue actions with other agencies and stakeholders to build a sustainable Delta and reduce conflicts between water supply conveyance and the environment. The Delta action plan aims to prioritize immediate short-term actions to stabilize the Delta while an ultimate solution is selected, and mid-term steps to maintain the Delta while a long-term solution is implemented. Currently, Metropolitan is working towards addressing three basin elements: Delta ecosystem restoration, water supply conveyance, and flood control protection and storage development.

"Table A" water is the maximum entitlement of SWP water for each water contracting agency. Currently, the combined maximum Table A amount is 4.17 MAFY. Of this amount, 4.13 MAFY is the maximum Table A water available for delivery from the Delta pumps as stated in the State Water Contract. However, deliveries commonly are less than 50 percent of the Table A.

SWP contractors may receive Article 21 water on a short-term basis in addition to Table A water if requested. Article 21 of SWP contracts allows contractors to receive additional water deliveries only under specific conditions, generally during wet months of the year (December through March). Because an SWP contractor must have an immediate use for Article 21 supply or a place to store it outside of the SWP, there are few contractors like Metropolitan that can access such supplies. .

Carryover water is SWP water allocated to an SWP contractor and approved for delivery to the contractor in a given year but not used by the end of the year. The unused water is stored in the SWP's share of San Luis Reservoir, when space is available, for the contractor to use in the following year.

Turnback pool water is Table A water that has been allocated to SWP contractors that has exceeded their demands. This water can then be purchased by another contractor depending on its availability.

SWP Delta exports are the water supplies that are transferred directly to SWP contractors or to San Luis Reservoir storage south of the Delta via the Harvey O. Banks pumping plant. Estimated average annual Delta exports and SWP Table A water deliveries have generally decreased since 2005, when Delta export regulations affecting SWP pumping operations became more restrictive due to the Biops. A summary SWP water deliveries from the years 2005 and 2013 is summarized in Table 3-1.

Table 3-1: Metropolitan Colorado River Aqueduct Program Capabilities

Year	Average Annual Delta Exports (MAF)	Average Annual Table A Deliveries (MAF)
2005	2.96	2.82
2013	2.61	2.55
Percent Change	-11.7%	-9.4%

The following factors affect the ability to estimate existing and future water delivery reliability:

- Water availability at the source: Availability depends on the amount and timing of rain and snow that fall in any given year. Generally, during a single-dry year or two, surface and groundwater storage can supply most water deliveries, but multiple-dry years can result in critically low water reserves.
- Water rights with priority over the SWP: Water users with prior water rights are assigned higher priority in DWR's modeling of the SWP's water delivery reliability, even ahead of SWP Table A water.
- Climate change: mean temperatures are predicted to vary more significantly than previously expected. This change in climate is anticipated to bring warmer winter storms that result in less snowfall at lower elevations, reducing total snowpack. From historical data, DWR projects that by 2050, the Sierra snowpack will be reduced from its historical average by 25 to 40 percent. Increased precipitation as rain could result in a larger number of "rain-on-snow" events, causing snow to melt earlier in the year and over fewer days than historically, affecting the availability of water for pumping by the SWP during summer.
- Regulatory restrictions on SWP Delta exports due to the Biops to protect special-status species such as delta smelt and spring- and winter-run Chinook salmon. Restrictions on SWP operations imposed by state and federal agencies contribute substantially to the challenge of accurately determining the SWP's water delivery reliability in any given year.
- Ongoing environmental and policy planning efforts: the California WaterFix involves water delivery improvements that could reduce salinity levels by diverting a greater amount of lower salinity Sacramento water to the South Delta export pumps. The EcoRestore Program aims to restore at least 30,000 acres of Delta habitat, and plans to be well on the way to meeting that goal by the year 2020.
- Delta levee failure: The levees are vulnerable to failure because most original levees were simply built with soils dredged from nearby channels and were not engineered. A breach of one or more levees and island flooding could affect Delta water quality and SWP operations for several months. When islands are flooded, DWR may need to drastically decrease or even cease SWP Delta exports to evaluate damage caused by salinity in the Delta (Department of Water Resources, The State Water Project Final Delivery Capability Report 2015, July 2015).

DWR has altered the SWP operations to accommodate species of fish listed under the Biops, and these changes have adversely impacted SWP deliveries. DWR's Water Allocation Analysis indicated that export restrictions are currently reducing deliveries to Metropolitan as much as 150 TAF to 200 TAF under median hydrologic conditions.

Operational constraints likely will continue until a long-term solution to the problems in the Bay-Delta is identified and implemented. New Biops for listed species under the Federal ESA or by the California Department of Fish and Game's issuance of incidental take authorizations under the Federal ESA and California ESA might further adversely affect SWP and CVP operations. Additionally, new litigation, listings of additional species or new regulatory requirements could further adversely affect SWP operations in the future by requiring additional export reductions, releases of additional water from storage or other operational changes impacting water supply operations.

3.2.3 Storage

Storage is a major component of Metropolitan's dry year resource management strategy. Metropolitan's likelihood of having adequate supply capability to meet projected demands, without implementing its Water Supply Allocation Plan (WSAP), is dependent on its storage resources.

Lake Oroville is the SWP's largest storage facility, with a capacity of about 3.5 MAF. The water is released from Oroville Dam into the Feather River as needed, which converges with the Sacramento River while some of the water at Bethany Reservoir is diverted from the California Aqueduct into the South Bay Aqueduct. The primary pumping plant, the Harvey O. Banks pumping plant, pumps Delta water into the California Aqueduct, which is the longest water conveyance system in California.

3.3 Groundwater

The City supplements its demands with groundwater extracted from the Central Groundwater Basin (Basin). The City has three operating wells, Well No.4, Well No. 5, and Well No. 10. Well No.4 is located at 11314 Leffingwell Road and has a design capacity of 1.52 cubic feet per second (cfs). Well No. 5 is located at 11477 Taddy Street and has a design capacity of 1.78 cfs. Both Well No. 4 and Well No. 5 provide water to the West Sector. Well No. 10 is located at Norwalk Park and has a design capacity of 4.46 cfs. It operates with a variable frequency drive to vary production based on system demand. Well No. 10 came online in May 2012 and was originally designed to provide most of the domestic demands within the City's service area to decrease dependence on imported water supplies. However, night time demands were too low and the full range of demands could not reliably be supplied by the well even with the VFD upon operation of the well. Therefore, the City changed the operation of Well No. 10 to operate only during higher system demand periods from 6 A.M. to 10 P.M (Norwalk, Water Master Plan, June 2014).

The City has increased its groundwater rights from the Basin to 2,273 AFY since 2010. The groundwater rights entitled to the City are a result of the adjudication of the Basin and subsequent successor to water rights from Junior Water Company, Inc., Bayard Ryder, the City of Santa Fe Springs, County Water Company, and the City of Vernon.

Historical over-pumping from the Basin has led to critical overdraft and seawater intrusion. In 1966, the Los Angeles Superior Court adjudicated groundwater pumping rights. The Basin currently faces overdraft every year due to pumping exceeding the rate of natural groundwater replenishment. As a result, WRD tracks the amount of groundwater production that occurs annually in the Basin. The estimated annual overdraft in 2015 is 97,200 AF and the estimated accumulated overdraft is 813,300 AF (WRD, Engineering Survey and Report, May 2015).

3.3.1 Central Groundwater Basin Characteristics

The Basin covers an area of about 270 square miles in the Los Angeles Coastal Plain in southeast Los Angeles County and has a total storage capacity of 13,800,000 AF. The Basin is bounded on the north by the Hollywood Basin, and the Elysian, Repetto, Merced, and Puente Hills. The southeast boundary is along Coyote Creek, which is used to separate the Basin from the Orange County Groundwater Basin. The southwest boundary is the Newport-Inglewood fault system and uplift which separates it from the West Coast Groundwater Basin.

Water bearing formations include Holocene and Pleistocene age sediments at depths that range from 1,000 feet to 2,200 feet. The Basin is divided into two forebays and two pressure areas: the Los Angeles forebay, the Montebello forebay, the Whittier pressure areas, and the Basin pressure area. Both forebays consists of unconfined groundwater conditions and relatively interconnected aquifers that extend up to 1,600 feet deep to provide recharge to the aquifer system. The pressure areas extends 2,200 feet below the surface and are the largest of the Basin divisions, consisting of many aquifers of permeable sands and gravels separated by semi-permeable to impermeable sandy clay.

The locations of both the Basin and West Coast Basin is shown on Figure 3-2.

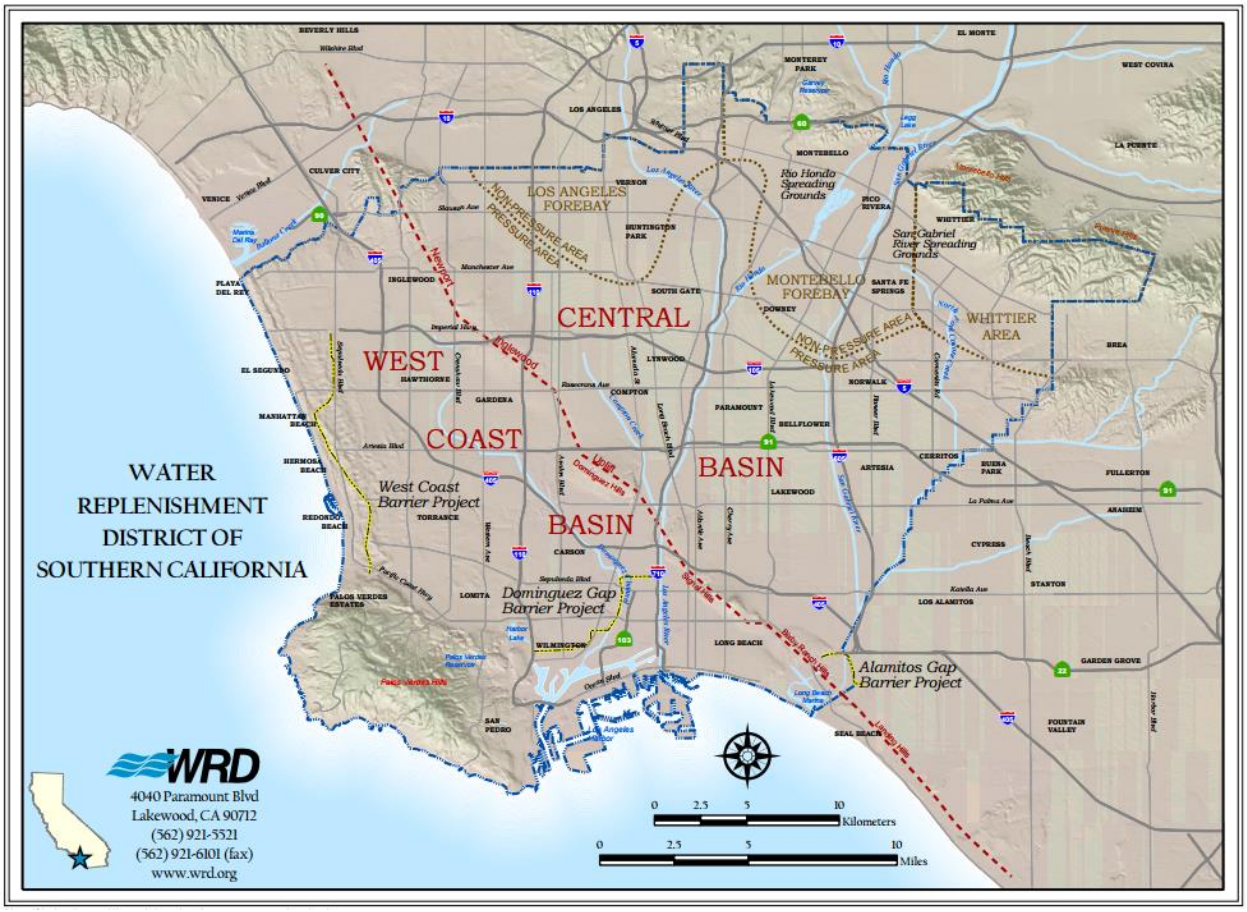

Figure 3-2: Central Basin and West Coast Basin Location Map

3.3.2 Groundwater Recharge

For the past 73 years, the Basin has been artificially replenished through the San Gabriel River and Rio Hondo Spreading Grounds (spreading grounds), which were constructed by the Los Angeles County Flood Control District (LACFCD) and are owned and operated by LACDPW. Currently, approximately 50,000 AFY of recycled water from the San Jose Creek Water Reclamation Plant, Whittier Narrows Water Reclamation Plant, and Pomona Water Reclamation Plant are used for groundwater replenishment.

The various methods of recharging the Basin using imported and recycled water are described below:

- Injection – WRD recharges the Basin by injecting water into it to prevent seawater intrusion. A barrier is formed by injection of treated imported water from Metropolitan in wells along the West Coast Barrier Project (between Redondo Beach and El Segundo) and the Dominguez Gap Barrier Project (east of Palos Verdes Peninsula).
- In-lieu Replenishment Water – The In-lieu program allows the natural recharge of the Basin by offsetting groundwater production with the use of imported water. The reduction in pumping naturally recharges the Basin.
- Transfer from the Basin – Although not well quantified, groundwater from the Basin flows into the West Coast Groundwater Basin through the Newport Inglewood Uplift. This, along with natural percolation due to stormwater and irrigation, make up a small part of the overall recharge to the West Coast Groundwater Basin (WRD, Engineering Survey and Report, May 2015).

3.3.3 Groundwater Historical Extraction

A summary of the groundwater volume pumped by the City is shown in Table 3-2.

Table 3-2: Groundwater Volume Pumped (AF)

Retail: Groundwater Volume Pumped						
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
Alluvial Basin	Central Groundwater Basin	411	513	905	943	960
	TOTAL	411	513	905	943	960
NOTES:						

3.4 Summary of Existing and Planned Sources of Water

The actual sources and volume of water for the year 2015 is displayed in Table 3-3.

Table 3-3: Water Supplies, Actual (AF)

Retail: Water Supplies — Actual			
Water Supply	Additional Detail on Water Supply	2015	
		Actual Volume	Water Quality
Groundwater	Central Groundwater Basin	960	Drinking Water
Purchased or Imported Water	CBMWD	1,323	Drinking Water
Recycled Water	CBMWD	82	Recycled Water
	Total	2,364	
NOTES:			

A summary of the current and planned sources of water for the City is shown in Table 3-4.

Table 3-4: Water Supplies, Projected (AF)

Retail: Water Supplies — Projected						
Water Supply	Additional Detail on Water Supply	Projected Water Supply *Report To the Extent Practicable*				
		2020	**2025**	**2030**	**2035**	**2040**
		Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Groundwater	Central Groundwater Basin	1,595	1,719	1,719	1,719	1,719
Purchased or Imported Water	CBMWD	405	281	281	281	281
Recycled Water	CBMWD	90	90	90	90	90
	Total	2,090	2,090	2,090	2,090	2,090
NOTES:						

3.5 Recycled Water

The City purchases recycled water from CBMWD to supplement its water supply. Recycled water is primarily used for irrigation purposes at schools and parks. More information concerning the City's current recycled water usage can be found in Section 6.

3.6 Supply Reliability

3.6.1 Overview

Every urban water supplier is required to assess the reliability of their water service to its customers under normal, dry, and multiple-dry water years. The City depends on a combination of imported and local supplies to meet its water demands and has taken numerous steps to ensure it has adequate supplies. Development of numerous local supplies augment the reliability of the imported water system. There are various factors that may impact reliability of supplies such as legal, environmental, water quality and climatic which are discussed below. The water supplies are projected to meet full-service demands; Metropolitan's 2015 UWMP finds that Metropolitan is able to meet, full-service demands of its member agencies starting 2020 through 2040 during normal years, single-dry year, and multiple-dry years.

Metropolitan's 2015 Integrated Water Resources Plan (IRP) update describes the core water resources that will be used to meet full-service demands at the retail level under all foreseeable hydrologic conditions from 2020 through 2040. The foundation of Metropolitan's resource strategy for achieving regional water supply reliability has been to develop and implement water resources programs and activities through its IRP preferred resource mix. This preferred resource mix includes conservation, local resources such as water recycling and groundwater recovery, Colorado River supplies and transfers, SWP supplies and transfers, in-region surface reservoir storage, in-region groundwater storage, out-of-region banking, treatment, conveyance and infrastructure improvements.

3.6.2 Metropolitan Integrated Resource Plan

The fundamental goal of the IRP is to have a reliable water system within southern California. Since the 2010 IRP, drought in California and across the southwestern United States has put the IRP adaptive management strategy to test. Dry conditions in California have persisted into 2015, resulting in a fourth consecutive year of drought. The year 2015 began with the driest January on record, resulting in the earliest and lowest snowpack peak in recorded history at only 17 percent of the traditional snowpack peak on April 1st. In the ten years since 2006, there were only two wet years, with the other eight years having been below normal, dry, or critically dry. The Colorado River watershed has also experienced an extended reduction in runoff. Within southern California, continuing dry conditions have impacted the region's local supplies, including its groundwater basins.

Southern California has a remarkable, unparalleled tradition of meeting its water challenges as a single cohesive region. Metropolitan serves as both importer of water and regional water planner. For the past generation, the IRP has served as the reliability road map for the region. Throughout 2015, Metropolitan engaged in a comprehensive process with its Board of Directors and member agencies to review how conditions have changed since the 2010 IRP Update and to establish targets for achieving regional

reliability, taking into account known opportunities and risks. Areas reviewed in the 2015 IRP Update include demographics, hydrologic scenarios, and water supplies from existing and new projects, water supply reliability analyses, and potential resource and conservation targets.

The 2015 IRP Update approach explicitly recognizes that there are remaining policy discussions that will be essential to guiding the development and maintenance of local supplies and conservation. Following adoption of the 2015 IRP Update and its targets for water supply reliability, Metropolitan will begin a process to address questions such as how to meet the targets for regional reliability, what are local and what are regional responsibilities, how to finance regional projects, etc. This discussion will involve extensive interaction with Metropolitan's Board of Directors and member agencies, with input from the public. The findings and conclusions of the 2015 IRP Update are (Metropolitan, Integrated Water Resources Plan, 2015):

- ***Action is needed –*** Without the investments in conservation, local supplies and the California WaterFix targeted in the 2015 IRP Update, Metropolitan's service area would experience unacceptable level of shortage allocation frequency in the future.
- ***Stabilize SWP supplies –*** The goal for SWP supplies is to adaptively manage flow and export regulations to achieve a long-term Delta solution that will enable a healthy ecosystem and address water reliability challenges. Also, efforts will be made to work with California WaterFix and California EcoRestore to facilitate a continuation of collaborative adaptive management with key regulatory agencies.
- ***Develop and protect local supplies and water conservation –*** The 2015 IRP Update embraces and advances the regional self-sufficiency ethics by increasing the targets for additional local supplies and conservation.
- ***Maximize the effectiveness of storage and transfers –*** Rebuilding Metropolitan's supply of water reserves is imperative when the drought is over. A comprehensive water transfer approach that takes advantage of water when it is available will help to stabilize and build storage reserves, increasing the ability for Metropolitan to meet water demands in dry years.
- ***Continue with the adaptive management approach –*** The IRP is updated periodically to incorporate changed conditions, and an implementation report is prepared annually to monitor the progress in resources development. The 2015 IRP also includes Future Supply Actions that would advance a new generation of local supplies through public outreach; development of legislation and regulation; technical studies and support; and land and resource acquisitions.

3.6.3 Factors Impacting Reliability

The following are some of the factors identified by Metropolitan that may have an impact on the reliability of Metropolitan supplies.

3.6.3.1 Environment

Endangered species protection needs in the Delta have resulted in operational constraints to the SWP system, as mentioned previously in the State Water Project Supplies section.

3.6.3.2 Legal

The addition of more species under the Endangered Species Act and new regulatory requirements could impact SWP operations by requiring additional export reductions, releases of additional water from storage or other operational changes impacting water supply operations.

3.6.3.3 Water Quality

3.6.3.3.1 Imported Water

Metropolitan is responsible for providing high quality potable water throughout its service area. Over 300,000 water quality tests are performed per year on Metropolitan's water to test for regulated contaminants and additional contaminants of concern to ensure the safety of its waters. Metropolitan's supplies originate primarily from the CRA and from the SWP. A blend of these two sources, proportional to each year's availability of the source, is then delivered throughout Metropolitan's service area.

Metropolitan's primary water sources face individual water quality issues of concern. The CRA water source contains higher total dissolved solids and the SWP contains higher levels of organic matter, lending to the formation of disinfection byproducts. To remediate the CRA's high level of salinity and the SWP's high level of organic matter, Metropolitan blends CRA and SWP supplies and has upgraded all of its treatment facilities to include ozone treatment processes. In addition, Metropolitan has been engaged in efforts to protect its Colorado River supplies from threats of uranium, perchlorate, and chromium VI while also investigating the potential water quality impact of emerging contaminants, N-nitrosodimethylamine (NDMA), and pharmaceuticals and personal care products (PPCP). While unforeseeable water quality issues could alter reliability, Metropolitan's current strategies ensure the deliverability of high quality water.

The presence of Quagga Mussels in water sources is a water quality concern. Quagga Mussels are an invasive species that was first discovered in 2007 at Lake Mead, on the Colorado River. This species of mussels form massive colonies in short periods of time, disrupting ecosystems and blocking water intakes. They are capable of causing significant disruption and damage to water distribution systems. Controlling the spread and impacts of this invasive species within the CRA requires extensive maintenance and results in reduced operational flexibility. It also resulted in Metropolitan eliminating deliveries of CRA water into Diamond Valley Lake to keep the reservoir free from Quagga Mussels.

3.6.3.3.2 Groundwater

Groundwater in the CBMWD is continually monitored because of its susceptibility to seawater intrusion, potential contamination from adjacent basins, and migration of shallow contamination into deeper aquifers. The Alamitos Barrier, located in the southwest portion of CBMWD's service area, provides a buffer between the Basin and seawater intrusion. Imported Water is purchased from Metropolitan to be used for surface spreading at the Montebello Fore bay and for seawater barrier injection at the Alamitos Barrier.

Except for a few instances of groundwater contamination problems, the Basin's groundwater quality is remarkably high. Contamination still occurs in isolated areas within the Basin. The major contaminants are listed below.

- Perchlorate
- Manganese
- Volatile Organic Compounds (VOC)
- Arsenic

The City also faces contamination from manganese and iron from the distribution system pipes and possibly from customer plumbing. The City has discovered high iron and manganese concentrations in their low pressure system are likely caused by release of buildup from pipes (Norwalk, Water Master Plan, June 2014).

Perchlorate

Perchlorate is a chemical compound used in a variety of defense and industrial applications, such as rockets, missiles, road flare, fireworks, air bag inflators, lubricating oils, tanning and finishing leather, and paints and enamels. As such, perchlorate commonly found in area where there was a defense industry complex. Human uptake of perchlorate is a health concern as it can inhibit the proper uptake of iodide by the thyroid gland, resulting in a decrease in hormones for normal growth and development and normal metabolism. Those that are affected most by the ingestion of perchlorate are infants, small children, and pregnant women. The California Department of Public Health (CDPH) finalized a primary maximum contaminant level (MCL) at 6 µg/L effective on October 2007.

Five production wells within the Basin had detectable perchlorate levels and only 2 out of 271 production wells contained perchlorate concentrations above the MCL.

The San Gabriel Valley Groundwater Basin was an important home of the defense industry in the 1950's and 1960's. Because of the amount of experimentation with rockets and rocket fuels, perchlorate is one of the most abundant contaminants that seeped into the groundwater. In response, the CBMWD Board of Directors supported a plan to clean up the contaminated groundwater before it migrated into the Basin. The "San Gabriel Basin Restoration Fund" was established through an act of Congress and the San Gabriel Valley Water Quality Authority was created. Eleven firms agreed to pay $200 million to construct various treatment facilities and other water quality projects throughout the San Gabriel Valley to remove contaminants and restore the groundwater basin. That effort by the Water Quality Authority continues to this day.

Manganese

Manganese is naturally-occurring, objectionable contaminant in water supply mainly for aesthetic reasons. Stains caused by manganese are black and difficult to remove. Manganese is a required nutrient that exists in natural environments. Humans need about one to ten milligrams per day for normal dietary requirements. However, elevated levels can have serious impacts, particularly on children. For example, neurologic damage (mental and emotional disturbances, as well as difficulty in moving) has been reported to be permanent among miners exposed to high levels of airborne manganese for long periods of time. Lower chronic exposures in the workplace resulted in a decrease in various motor skills, balance and coordination, as well as increased memory loss, anxiety, and sleeplessness.

The secondary MCL for manganese is 5 parts per billion. Manganese concentrations in the Basin has widespread vertical and horizontal variations.

Iron

Iron occurs naturally in groundwater and is leached from sediments in the subsurface aquifers and steel pipes used for construction of water wells and distribution systems and can affect the water's suitability for domestic and industrial purposes. The secondary MCL for iron in drinking water is 0.3 milligrams per Liter. High concentrations can stain plumbing fixtures and clothing, encrust well screens, clog pipes, and impart a salty taste. Iron is an essential nutrient, important for human health, and does not pose significant health effects except in special cases.

Volatile Organic Compounds

VOC's, such as perchloroethylene (PCE), was used as the primary chemical by dry cleaners for decades and trichloroethylene (TCE) was used as an industrial cleaning and degreasing solvent. Both of these organic compounds were generally used in quantities sufficient to contaminate the groundwater and both of them are considered carcinogenic even at low concentrations.

Recently, a contaminated groundwater spill site was identified by the EPA. The Omega Chemical Corporation operated between 1976 and 1991 in an area of Whittier near Whittier Boulevard. Drums of waste solvents and other chemicals from various industrial activities were processed at this facility. As a result of the operations, spills and leaks of various chemicals occurred. The soil and groundwater beneath the Omega property became contaminated with high concentrations of PCE and TCE as well as Freon's 11 and 113 and other contaminants. Contaminated groundwater now extends about 4 miles down gradient of the Whittier property into Santa Fe Springs and the City. In January 1999, the Omega site was placed on the EPA's National Priorities List, which is also known as Superfund List. EPA is now engaged in reviewing and selecting a methodology for cleaning up the contamination plume. CBMWD will continue to work with EPA and the retail agencies in the area to further develop this methodology in the near future.

Arsenic

Arsenic is a naturally occurring element that exists in the earth's rock formation and in the seas. Natural sources of arsenic include weathering and erosion of rocks, deposition of arsenic in water bodies, and uptake of the metal by animals and plants. Arsenic is odorless and tasteless, but it is toxic to humans, particularly in high concentrations or in low concentrations over a prolonged period. Arsenic is classified as a known human carcinogen by the EPA. CDPH established the primary MCL for arsenic at 10 µg/L effective November 28, 2008.

Ten production wells in the Basin contained arsenic concentrations above the established MCL between the years 2006-2009 (WRD, Regional Groundwater Monitoring Report, February 2015).

3.6.3.4 Climate Change

Changing climate patterns are expected to shift precipitation patterns and affect water supply. Unpredictable weather patterns will make water supply planning more challenging. The areas of concern for California include a reduction in Sierra Nevada Mountain snowpack, increased intensity and frequency of extreme weather events, and rising sea levels causing increased risk of Delta levee failure, seawater intrusion of coastal groundwater basins, and potential cutbacks on the SWP and CVP. The major impact in California is that without additional surface storage, the earlier and heavier runoff (rather than

snowpack retaining water in storage in the mountains), will result in more water being lost to the oceans. A heavy emphases on storage is needed in the State of California.

In addition, the Colorado River Basin supplies have been inconsistent since about the year 2000, resulting in 13 of the last 16 years of the upper basin runoff being below normal. Climate models are predicting a continuation of this pattern whereby hotter and drier weather conditions will result in continuing lower runoff.

Legal, environmental, and water quality issues may have impacts on Metropolitan supplies. It is felt, however, that climatic factors would have more of an impact than legal, water quality, and environmental factors. Climatic conditions have been projected based on historical patterns but severe pattern changes are still a possibility in the future.

3.6.4 Normal Year Reliability Comparison

The City has entitlements to receive imported water from Metropolitan through CBMWD via connection to Metropolitan's regional distribution system. Although pipeline and connection capacity rights do not guarantee the availability of water, they do guarantee the ability to convey water when it is available to the Metropolitan distribution system. All imported water supplies are assumed available to the City from existing water transmission facilities. The demand and supplies listed below also include local groundwater supplies that are available to the City through adjudicated groundwater basin rights.

For the 2015 UWMP, the normal year condition was selected as an average of demand based on hydrology from 1922-2004 as developed by Metropolitan and used in CBMWD’s UWMP. This average of historical demand data was used to project future demand due to the variable climate within California and multiple factors that influence demand.

3.6.5 Single Dry Year Reliability Comparison

A single dry year is defined as a single year of no to minimal rainfall or a year that represents the lowest water supply available. The City has documented that it is 100 percent reliable for single-dry year demands from 2020 through 2040 with a demand increase of 3 percent using water year 1977 as the single-dry year. This percentage was determined for CBMWD by Metropolitan based on historical data for all of its retail agencies and applied to the City.

3.6.6 Multiple Dry Year Period Reliability Comparison

Multiple dry years are defined as the period that represents the lowest average water supply availability for a consecutive multiple year period (three years or more). The City is capable of meeting all customers’ demands with significant reserves held by Metropolitan, local groundwater supplies, and conservation in multiple-dry years from 2020 through 2040 with a demand increase of 5 percent using water year 1990-1992 as the driest years. Metropolitan chose the highest average demand over a three year period for the multiple dry year demand increase based on historical data. This value was repeated over the three year span as a conservative assumption where demand would increase significantly in a prolonged drought and would remain constant through the years. The methodology was developed for CBMWD and applied to the City for the UWMP; the results are located in Table 3-5.

Table 3-5: Basis of Water Year Data

Retail: Basis of Water Year Data			
Year Type	**Base Year**	**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	1922-2004		100%
Single-Dry Year	1977		103%
Multiple-Dry Years 1st Year	1990		105%
Multiple-Dry Years 2nd Year	1991		105%
Multiple-Dry Years 3rd Year	1992		105%

3.7 Supply and Demand Assessment

A comparison between supply and demand for the projected years between 2010 and 2040 is shown in Table 3-6. As stated above, the available supply will meet projected demand due to diversified supply and conservation measures.

Table 3-6: Normal Year Supply and Demand Comparison (AF)

Retail: Normal Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040
Supply totals	2,090	2,090	2,090	2,090	2,090
Demand totals	2,090	2,090	2,090	2,090	2,090
Difference	0	0	0	0	0
NOTES:					

A comparison between the supply and the demand in a single-dry year is shown in Table 3-7. As stated above, the available supply will meet projected demand due to diversified supply and conservation measures.

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

Retail: Single Dry Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040
Supply totals	2,153	2,153	2,153	2,153	2,153
Demand totals	2,153	2,153	2,153	2,153	2,153
Difference	0	0	0	0	0
NOTES:					

A comparison between the supply and the demand in multiple-dry years is shown in Table 3-8.

Table 3-8: Multiple-Dry Years Supply and Demand Comparison (AF)

Retail: Multiple Dry Years Supply and Demand Comparison						
		2020	2025	2030	2035	2040
First year	Supply totals	2,195	2,195	2,195	2,195	2,195
	Demand totals	2,195	2,195	2,195	2,195	2,195
	Difference	0	0	0	0	0
Second year	Supply totals	2,195	2,195	2,195	2,195	2,195
	Demand totals	2,195	2,195	2,195	2,195	2,195
	Difference	0	0	0	0	0
Third year	Supply totals	2,195	2,195	2,195	2,195	2,195
	Demand totals	2,195	2,195	2,195	2,195	2,195
	Difference	0	0	0	0	0
NOTES:						

4 DEMAND MANAGEMENT MEASURES

The goal of the Demand Management Measures (DMM) section is to provide a comprehensive description of the water conservation programs that a supplier has implemented, is currently implementing, and plans to implement in order to meet its urban water use reduction targets. The reporting requirements for DMM has been significantly modified and streamlined in 2014 by Assembly Bill 2067. For a retail agency such as the City the requirements changed from having 14 specific measures to six more general requirements plus an "other" category.

4.1 Water Waste Prevention Ordinances

The City Council Declared the activation of Phase II of the City's Water Shortage Contingency Plan with Resolution No. 15-31 on June 2, 2015, pursuant to Ordinance No. 1378 and the activation of Chapter 8.52 of the City's Municipal Code (excepting subsection 8.52.030). Resolution No. 15-31 establishes water conservation requirements and prohibition against waste as follows:

- Limits on watering hours
- Limit on watering duration
- No excessive water flow or runoff
- No washing down hard or paved surfaces
- Obligation to fix leaks, break, or malfunctions
- Re-circulating water required for water fountains and decorative water features
- Limits on washing vehicles
- Drinking water served upon request only

The provisions and water conservation measures to be implemented in response to each shortage level are described in Section 5 of the UWMP. The City's Water Shortage Contingency Plan ordinance is included in Appendix D.

The City issued voluntary conservation efforts in 2011 before issuing a resolution for Phase I of the NMWS Water Shortage Contingency Plan in January 2014. In June 2015, another resolution to activate Phase II of the NMWS Water Shortage Contingency Plan. The notifications of these actions were provided in water billings, Facebook posts, the City's website, on the electronic reader board, and in the City's newsletter publications. The City also provides door hangers for water wasters.

4.2 Metering

The City meters all customers, including separate metering for single-family residential, multi-family residential, commercial/institutional, industrial, and large landscape facilities.

The City calibrates and replaces meters in the system as needed, as part of its ongoing operations and maintenance program. Meters suspected of inadequate performance are replaced or repaired to ensure accuracy.

Large increases in water consumption within a short period of time on any account is noted and investigated. In addition, if any customer questions the water use within its own residence or facility, and so informs the City, the City will investigate the matter to determine the cause.

There are few large landscape irrigation sites within the City. There are dedicated meters for landscape sites that constitute approximately one-tenth of one percent (0.1 percent) of the total water meters. Most of these facilities use recycled water for irrigation. The incentive to use recycled water is its lower cost than potable water and its availability of supply. The rate for recycled water is $2.50 per 100 cubic feet, regardless of the quantities purchased.

The City received a grant from the Bureau of Reclamation (BOR) as part of Prop 84 in 2014 with the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority for a pilot program to install Advanced Meter Readers (AMR) throughout the Los Angeles Region. The City will install 650 AMR's that will replace aged meters within the City by 2017. The AMR's will allow remote access for meter reading activities, reduce meter reading times, and improve efficiencies.

4.3 Conservation Pricing

The City's FY2014-15 water rate is a uniform rate structure of $3.12 per hundred cubic feet (HCF) for all water use sectors (single-family residential, multi-family residential, and commercial/institutional/industrial). The City increases the commodity rate upon determination that additional revenues are needed to maintain the water system and provide a higher level of service to its customers. The City's water rate also includes fixed components consisting of water connection fees and meter service charges. Fixed charges are based on meter size ranging from $51.49 per billing period (bi-monthly) for a 5/8-inch meter to $576.20 per billing period for a 6-inch meter.

The City does not have conservation pricing due to Prop 218 limitations.

4.4 Public Education and Outreach

The City has developed a public information program to educate the public to the benefits of water conservation. The program involves the dissemination of information through literature provided at City Hall, community events, summer concert series, and other City facilities, articles in the City newsletter, as well as the City's quarterly recycling publication: One Person's Trash, local cable television, and social media posts. The City includes informational flyers with the water bills periodically to address water conservation and other important matters.

The City has incorporated a section in the School Tours programs that includes water conservation, storm water prevention and recycling activities. These tours are conducted year round to schools interested in visiting City Hall. A City Hall Tour includes as many as 100 elementary school children per visit and can be provided as often as requested; however the average is two to three times per year. The City will continue to evaluate the potential to enhance the school education programs to promote water

conservation to that sector of the community. This will be done as a part of normal operation and administrative duties; no separate budget has been created for this program at this time.

The City has participated in water conservation programs with CBMWD and Metropolitan. CBMWD's public information efforts consist of a variety of programs and practices, such as gardening workshops, median/lawn signs, and mail inserts that are used to educate the public about water conservation. Conservation literature is provided to the public at all City facilities as well as distributed at various one-day programs and community events.

CBMWD also provides the community with a Speakers Bureau through which CBMWD's Board of Directors and staff work with local civic organizations and service clubs to provide information on a variety of programs and projects that promote conservation. Additionally, CBMWD provides education through its website, an interactive blog, and various publication materials.

The City has effectively bolstered its community outreach and public education programs by integrating social marketing strategies with existing outreach programs. The City has increased the number of conservation material posted on the City website, as well as use of social media to disseminate information through websites such as Facebook and YouTube. The City has realized many campaign successes of increased community involvement, which is reflective in the upward curve of its website traffic.

4.5 Programs to Assess and Manage Distribution System Real Loss

Senate Bill 1420 signed into law in September 2014 requires urban water suppliers that submit UWMPs to calculate annual system water losses using the water audit methodology developed by AWWA. SB 1420 requires the water loss audit be submitted to DWR every five years as part of the urban water supplier's UWMP. Water auditing is the basis for effective water loss control. DWR's UWMP Guidebook include a water audit manual intended to help water utilities complete the AWWA Water Audit on an annual basis. A Water Loss Audit was completed for the City which identified areas for improvement and quantified total loss. Based on the data presented, the three priority areas identified were billed metered, customer metering inaccuracies, and customer retail unit cost (applied to apparent losses). Multiple criteria are a part of each validity score and a system wide approach will need to be implemented for the City's improvement. Quantified water loss for the FY 2014-15 was 151 AF. The City completes a system water audit to calculate water losses on an annual basis.

As part of the normal operation and maintenance of the City's water system, water division staff does preventive maintenance and continuous inspections on meter readings. This includes regular valve, meter, detector check, and pipeline maintenance. If during routine inspection of the system leaks are encountered or suspected, further evaluation is conducted, and if leaks are found, they are repaired typically within two days depending on severity.

The City repairs main pipeline leaks as soon as they are determined. Valves are checked routinely and repaired or replaced as necessary. Hydrants are periodically checked to ensure proper operation. New service lines replace existing pipelines as needed. Annual evaluation of well performance is done. These programs are included in capital replacement program and operations budgets.

The City will continue to monitor the water system loss through existing Water Department Operation & Maintenance funding, and if a trend develops to indicate that further analyses are required, the City will

provide the necessary funds to institute a more formal leak detection program. The City is installing AMRs that provide remote access to water use and can provide indication of leaks. The 650 AMRs that are part of the pilot program should be installed by 2017.

A list of water audits/leak detection services from 2010-15 is included in Appendix G. The City does not have a formal leak detection program, but is currently pursing grant funding with Southern California Edison for a water loss study.

4.6 Water Conservation Program Coordination and Staffing Support

Various City staff are involved in the water conservation program. These include managerial and administrative staff, maintenance and operations personnel, Water Department Superintendent, and administrative staff who answer billing and usage questions. The staff serve as part-time water conservation coordinators by nature of their duties and responsibilities in performing their job functions. This includes implementation of DMMs. The amount of time that staff members conduct water conservation activities varies depending upon water supply and demand issues, and drought conditions. It averages at least 25 to 30 percent per year.

The City serves water to a small portion of the City and as such does not retain a full-time water conservation coordinator. At this time, the responsibilities of such a position will continue to adequately be served by a collective number of employees.

The water conservation program funding comes from the City's Water Fund.

4.7 Other Demand Management Measures

During the past five years, FY 2010-11 to 2014-15, the City, with the assistance of CBMWD, has implemented many water use efficiency programs for its residential, CII, and landscape customers as described below. The City will continue to implement all applicable programs in the next five years.

4.7.1 Residential Programs

Socal Water$mart Rebate Program for Residential

The City through CBMWD offers rebates for turf removal, high efficiency clothes washers, weather based irrigation controllers (WBIC), rain barrels, rotating nozzles for pop-up spray heads, and soil moisture sensor systems (SMSS). It also offers rebates for High Efficiency Toilets (HET) because the largest amount of water used inside a home, 30 percent, goes toward flushing the toilet. The HET offers free HETs and rebates to residential customers for replacing their standard, water-guzzling toilets with HETs. HETs use just 1.28 gallons of water or less per flush, which is 20 percent less water than standard toilets. In addition, HETS save an average of 38 gallons of water per day while maintaining high performance standards.

4.7.2 CII Programs

Socal Water$mart Rebate Program for CII

The City through CBMWD offers financial incentives under the Socal Water$mart Rebate Program which offers rebates for various water efficient devices to CII customers, such as high efficiency toilets, ultralow volume urinals, connectionless food steamers, air-cooled ice machines, pH-cooling towers controller, and dry vacuum pumps.

Other CII Rebate Programs

In addition to the Water$mart Rebates, the City through CBMWD also offers rebates for WBICs, central computer irrigation controllers, large rotary nozzles, rotating nozzles for pop-up spray heads, ice-making machines, laminar flow restrictors, in-stem flow restrictors, plumping flow control, SMSS, turf removal, public agency landscape, landscape irrigation surveys, and water savings surveys.

4.7.3 Landscape Programs

Smart Gardening Workshops

CBMWD continues a partnership with the Los Angeles County Department of Public Works to bring free, educational gardening workshops to local residents. The workshops, which are offered in English and Spanish, provide information on California native plants, composting and gardening tips for residents, business owners, and local landscapers.

Drought Gardening Classes

With the increased interest in removing lawns to conserve water, CBMWD partnered with Metropolitan to host Drought Gardening Classes throughout the service area. These three hour classes provide information and the tools on how to create drought tolerant landscaping. Residents are taught by a landscape professional. Each resident leaves the class with a better understanding on how water flows outside their home and how to best capture and use it for irrigation.

DWR Grant (Prop 50) – Large Landscape Water Conservation/Management and Education Program

The Large Landscape Water Conservation, Runoff Reduction and Educational Program provides $900,000 in funding for the implementation of a water management program using weather-based irrigation controllers and wireless technologies to significantly reduce the amount of runoff from large landscapes, street medians, and residential properties. CBMWD partners with local public agencies such as cities and school Districts to create Demonstration Gardens that enrich the environmental awareness of the community and promote the benefits of water efficient gardens.

U.S. D.O.E. (Energy Efficiency Conservation Block Grant) Water and Energy Emergency End Use Demand Management Measures Grant

The Water and Energy Emergency End Use Demand Management Measures Grant in the amount of $2,000,000 was awarded to CBMWD under the United States Department of Energy Recovery Act - Energy Efficiency and Conservation Block Grant Program. Under this program, funding is provided to purchase and install a series of wireless controllers in residential and commercial settings that use radio commands

for periodic pressure and management adjustments. A second element of the grant addresses water and energy demand management in recycled pipelines.

Socal Water$mart Rebate Program for Landscape

The City through CBMWD also offers financial incentives under the SoCal Water$mart Rebate Program for a variety of water efficient landscape devices, such as Central Computer Irrigation Controllers, large rotary nozzles, and in-stem flow regulators.

5 WATER SHORTAGE CONTINGENCY PLAN

5.1 Overview

In connection with recent water supply challenges, the State Water Resources Control Board found that California has been subject to multi-year droughts in the past, and the Southwest is becoming drier, increasing the probability of prolonged droughts in the future. Due to current and potential future water supply shortages, Governor Brown issued a drought emergency proclamation on January 2014 and signed the 2014 Executive Order that directs urban water suppliers to implement drought response plans to limit outdoor irrigation and wasteful water practices if they are not already in place. Pursuant to California Water Code Section 106, it is the declared policy of the state that domestic water use is the highest use of water and the next highest use is irrigation. This section describes the water supply shortage policies Metropolitan, CBMWD, and the City have in place to respond to events including catastrophic interruption and reduction in water supply.

5.2 Shortage Actions

5.2.1 Metropolitan Water Surplus and Drought Management Plan

Metropolitan evaluates the level of supplies available and existing levels of water in storage to determine the appropriate management stage annually. Each stage is associated with specific resource management actions to avoid extreme shortages to the extent possible and minimize adverse impacts to retail customers should an extreme shortage occur. The sequencing outlined in the Water Surplus and Drought Management (WSDM) Plan reflects anticipated responses towards Metropolitan's existing and expected resource mix.

Surplus stages occur when net annual deliveries can be made to water storage programs. Under the WSDM Plan, there are four surplus management stages that provides a framework for actions to take for surplus supplies. Deliveries in Diamond Valley Lake (DVL) and in SWP terminal reservoirs continue through each surplus stage provided there is available storage capacity. Withdrawals from DVL for regulatory purposes or to meet seasonal demands may occur in any stage.

The WSDM Plan distinguishes between shortages, severe shortages, and extreme shortages. The differences between each term is listed below.

- Shortage: Metropolitan can meet full-service demands and partially meet or fully meet interruptible demands using stored water or water transfers as necessary.
- Severe Shortage: Metropolitan can meet full-service demands only by using stored water, transfers, and possibly calling for extraordinary conservation.
- Extreme Shortage: Metropolitan must allocate available supply to full-service customers.

There are six shortage management stages to guide resource management activities. These stages are defined by shortfalls in imported supply and water balances in Metropolitan's storage programs. When Metropolitan must make net withdrawals from storage to meet demands, it is considered to be in a shortage condition. Figure 5-1 gives a summary of actions under each surplus and shortage stages when

an allocation plan is necessary to enforce mandatory cutbacks. The goal of the WSDM Plan is to avoid Stage 6, an extreme shortage.

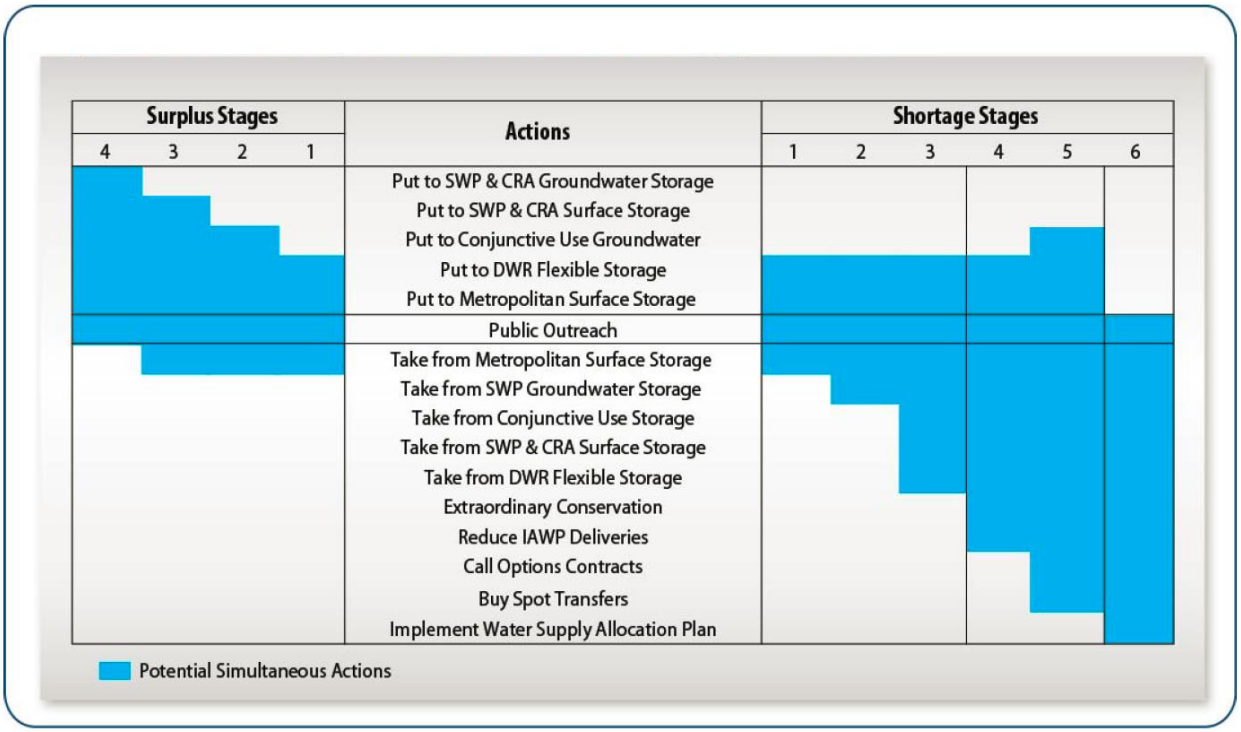

Figure 5-1: Resource Stages, Anticipated Actions, and Supply Declarations

Metropolitan's Board of Directors adopted a Water Supply Condition Framework in June 2008 in order to communicate the urgency of the region's water supply situation and the need for further water conservation practices. The framework has four conditions, each calling increasing levels of conservation. Descriptions for each of the four conditions are listed below:

- Baseline Water Use Efficiency: Ongoing conservation, outreach, and recycling programs to achieve permanent reductions in water use and build storage reserves.
- Condition 1 Water Supply Watch: Local agency voluntary dry-year conservation measures and use of regional storage reserves.
- Condition 2 Water Supply Alert: Regional call for cities, counties, member agencies, and retail water agencies to implement extraordinary conservation through drought ordinances and other measures to mitigate use of storage reserves.
- Condition 3 Water Supply Allocation: Implement Metropolitan's WSAP

As noted in Condition 3, should supplies become limited to the point where imported water demands cannot be met, Metropolitan will allocate water through the WSAP (Metropolitan, 2015 Final UWMP, May 2016).

5.2.2 Metropolitan Water Supply Allocation Plan

Metropolitan's imported supplies have been impacted by a number of water supply challenges as noted earlier. In case of extreme water shortage within the Metropolitan service area is the implementation of its WSAP.

Metropolitan's Board of Directors adopted the WSAP in February 2008 to fairly distribute a limited amount of water supply and applies it through a detailed methodology to reflect a range of local conditions and needs of the region's retail water consumers.

The WSAP includes the specific formula for calculating member agency supply allocations and the key implementation elements needed for administering an allocation. Metropolitan's WSAP is the foundation for the urban water shortage contingency analysis required under Water Code Section 10632 and is part of Metropolitan's 2015 UWMP.

Metropolitan's WSAP was developed in consideration of the principles and guidelines in Metropolitan's 1999 WSDM Plan with the core objective of creating an equitable "needs-based allocation". The WSAP's formula seeks to balance the impacts of a shortage at the retail level while maintaining equity on the wholesale level for shortages of Metropolitan supplies of up to 50 percent. The formula takes into account a number of factors, such as the impact on retail customers, growth in population, changes in supply conditions, investments in local resources, demand hardening aspects of water conservation savings, recycled water, extraordinary storage and transfer actions, and groundwater imported water needs.

The formula is calculated in three steps: 1) based period calculations, 2) allocation year calculations, and 3) supply allocation calculations. The first two steps involve standard computations, while the third step contains specific methodology developed for the WSAP.

Step 1: Base Period Calculations – The first step in calculating a member agency's water supply allocation is to estimate their water supply and demand using a historical based period with established water supply and delivery data. The base period for each of the different categories of supply and demand is calculated using data from the two most recent non-shortage fiscal years ending 2013 and 2014.

Step 2: Allocation Year Calculations – The next step in calculating the member agency's water supply allocation is estimating water needs in the allocation year. This is done by adjusting the base period estimates of retail demand for population growth and changes in local supplies.

Step 3: Supply Allocation Calculations – The final step is calculating the water supply allocation for each member agency based on the allocation year water needs identified in Step 2. Table 5-1 presents the elements that form the basis for calculating the supply allocation by Metropolitan.

Table 5-1: Metropolitan's Shortage Allocation Index

Regional Shortage Level	Wholesale Minimum Percentage	Maximum Retail Impact Adjustment Percentage
1	92.5%	2.5%
2	85%	5.0%

3	77.5%	7.5%
4	70.0%	10.0%
5	62.5%	12.5%
6	55.0%	15.0%
7	47.5%	17.5%
8	40.0%	20.0%
9	32.5%	22.5%
10	25.0%	25.0%

In order to implement the WSAP, Metropolitan's Board of Directors makes a determination on the level of the regional shortage, based on specific criteria, typically in April. The criteria used by Metropolitan includes, current levels of storage, estimated water supplies conditions, and projected imported water demands. The allocations, if deemed necessary, go into effect in July of the same year and remain in effect for a 12-month period. The schedule is made at the discretion of the Board of Directors.

Although Metropolitan's 2015 UWMP forecasts that Metropolitan will be able to meet projected imported demands throughout the projected period from 2020 to 2040, uncertainty in supply conditions can result in Metropolitan needing to implement its WSAP to preserve dry-year storage and curtail demands (Metropolitan, 2015 UWMP, May 2016).

5.2.3 CBMWD Water Supply Allocation Plan

CBMWD's Board of Directors approved to move forward reevaluating CBMWD's existing plan. The framework for CBMWD's WSAP contains similar guiding principles under Metropolitan's plan.

- The baseline for CBMWD retail agency demand is estimated on a two year average during FY 2012-2013 and FY 2013-2014.
- Conservation Demand Hardening credits can be applied using a method based on GPCD water use reductions. Qualifying mandatory conservation ordinances and requirements can be taken into consideration.
- Includes a provision for replenishment water deliveries to drought-impacted groundwater basins through a qualifying consultation process with Metropolitan.
- An Allocation Surcharge will be imposed to agencies who exceed their maximum allocated supplies.

Water use between 100 percent and 115 percent of the allocated amount will result in an Allocation Surcharge of $1,480 per AF. Water use greater than 115 percent of the allocated amount will result in an Allocation Surcharge of $2,960 per AF.

The WSAP will become effective once a regional shortage is declared by Metropolitan. The allocation period typically covers a fiscal year 12-month period beginning in July and ending in the following June.

Monthly reports can be used to track potential overage of annual allocations that might be charged at the end of the 12-month allocation period (CBMWD, CBMWD Imported Water Supply Allocation Plan, October 2014)

5.2.4 City of Norwalk

City Council adopted an Emergency Water Conservation Plan, Ordinance No. 1378, on March 5, 1991, which established a staged water conservation program that encourages reduced water consumption within the City through conservation, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, and maximize the efficient use of water within the City. The Emergency Water Conservation Plan consists of three stages to respond to a reduction in potable water available to the City for distribution to its customers. A summary of the stages of water shortage is displayed in Table 5-2 (Norwalk, Ordinance No. 1378, March 1991). The City will first go on voluntary reduction followed by the three phases of the Emergency Water Conservation Plan based on Metropolitan's WSAP. The City is currently in Phase 2 of its Water Shortage Contingency Plan through the adoption of Resolution No. 15-31 on June 2, 2015 (Norwalk, Resolution No. 15-31, June 2015).

Table 5-2: Stages of Water Shortage Contingency Plan

Retail Stages of Water Shortage Contingency Plan		
Stage	Complete Both	
	Percent Supply Reduction[1]	Water Supply Condition
1	up to 10%	A Phase 1 Shortage is declared when the City Council determines a ten percent reduction in water supplies is likely. This may be triggered when Metropolitan declares their WSAP Regional Shortage Level 1-3.
2	10-20%	A Phase 2 Shortage is declared when the City Council determines it will likely suffer a water shortage greater than ten percent but less than twenty percent in water supplies. This may be triggered when Metropolitan declares their WSAP Regional Shortage Level 4-8.
3	> 20 - 50%	A Phase 3 Shortage is declared when the City Council determines a shortage greater than twenty percent reduction in water supplies is likely. This may be triggered when Metropolitan declares their WSAP Regional Shortage Level 9-10.
[1] One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.		
NOTES:		

5.3 Three-Year Minimum Water Supply

As a matter of practice, Metropolitan does not provide annual estimates of the minimum supplies available to its member agencies. As such, Metropolitan member agencies must develop their own estimates for the purposes of meeting the requirements of the Act.

Section 135 of the Metropolitan water Act declares that a member agency has the right to invoke its "preferential right" to water, which grants each member agency a preferential right to purchase a percentage of Metropolitan's available supplies based on specified, cumulative financial contributions to Metropolitan. Each year, Metropolitan calculates and distributes each member agency's percentage of preferential rights. However, since Metropolitan's creation in 1927, no member agency has ever invoked these rights as a means of acquiring limited supplies from Metropolitan.

As an alternative to invoking preferential rights, Metropolitan and its member agencies accepted the terms and conditions of Metropolitan's shortage allocation plan, which allocated imported water under limited supply conditions. In fact, in FY 2015-2016, Metropolitan implemented its WSAP at a stage level 3 (seeking no greater than 15 percent region reduction of water use), which is the largest reduction Metropolitan has ever imposed on its member agencies. This WSAP level 3 reduction was determined

when Metropolitan water supplies from the SWP was at its lowest levels ever delivered and water storages declined greater than 1 MAF in one year.

As captured in its 2015 UWMP, Metropolitan believes that the water supply and demand management actions it is undertaking will increase its reliability throughout the 25-year period addressed in its plan. Thus for purposes of this estimate, it is assumed that Metropolitan and CBMWD will be able to maintain the identified supply amounts throughout the three-year period.

The Three Year Estimated Minimum Water Supply is listed in Table 5-3.

Table 5-3: Minimum Supply Next Three Years (AF)

Retail: Minimum Supply Next Three Years			
	2016	2017	2018
Available Water Supply	2,161	2,161	2,161
NOTES: From recycled water projections, groundwater rights, and imported water allocations			

5.4 Catastrophic Supply Interruption

It is important for the City and the regional water agencies to establish a response plan in the event of a catastrophic water supply interruption. Loss of water supply can occur from a prolonged drought, water system contamination, power outage, or natural disaster such as an earthquake. Emergency and drought response planning is an integral part of effective water system management.

5.4.1 Metropolitan

Metropolitan has comprehensive plans for stages of actions it would undertake to address a catastrophic interruption in water supplies through its WSDM Plan and WSAP. Metropolitan also developed an Emergency Storage Requirement to mitigate against potential interruption in water supplies resulting from catastrophic occurrences within the southern California region, including seismic events along the San Andreas Fault. In addition, Metropolitan is working with the state to implement a comprehensive improvement plan to address catastrophic occurrences outside of the southern California region, such as a maximum probable seismic event in the Delta that would cause levee failure and disruption of SWP deliveries. For greater detail on Metropolitan's planned responses to catastrophic interruption, please refer to Metropolitan's 2015 UWMP.

5.4.2 City of Norwalk

The City maintains several metered connections and emergency interconnections which can be used for emergency sources of supply. The City has connections with the City of Santa Fe Springs, Liberty Utilities and Golden State Water Company (Norwalk, Water Master Plan, June 2014).

The City has established a Water Quality Notification Plan and Procedure to be used in the event of water system or water quality problems. The procedure ensures notification of the appropriate City management, regional and state agencies, and the public. This procedure can be used to keep all levels

of the City government informed of water use during critical emergency times. This would be done to assure swift and decisive action if the data so requires, in order to protect public safety and provide water service to essential services.

The City participates in the Standardized Emergency Management System (SEMS) which requires that emergency response agencies use basic principles and components of emergency management. Through this system, the City is able to keep informed of important developments relating to emergency events within the region and interface with other agencies as needed.

5.5 Prohibitions, Penalties and Consumption Reduction Methods

5.5.1 Prohibitions

The City's Water Conservation Ordinance No. 1378 lists water conservation requirements that will take effect upon implementation by the City Council. These prohibitions will promote the efficient use of water, reduce or eliminate water waste, and enable implementation of the City's Water Shortage Contingency Measures.

Water conservation measures become more restrictive per each progressive stage in order to address the increasing differential between water supply and demand.

A list of restrictions and prohibitions that are applicable to each stage is displayed in Table 5-4 (Norwalk, Ordinance No. 1378, March 1991).

Table 5-4: Restrictions and Prohibitions on End Uses

Retail Only: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
1	Other - Prohibit use of potable water for washing hard surfaces	-	Yes
1	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	-	Yes
1	Water Features - Restrict water use for decorative water features, such as fountains	-	Yes
1	CII - Restaurants may only serve water upon request	-	Yes

Retail Only: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	-	Yes
1	Landscape - Limit landscape irrigation to specific times	Landscape may not be watered during the hours of 10 AM to 4 PM. Provisions do not apply to commercial nurseries, golf courses, and other water-dependent industries.	Yes
1	Landscape - Limit landscape irrigation to specific days	Landscape may not be watered more than every other day. Provisions do not apply to commercial nurseries, golf courses, and other water-dependent industries.	Yes
1	Landscape - Restrict or prohibit runoff from landscape irrigation	-	Yes
2	Landscape - Limit landscape irrigation to specific times	Landscape may not be watered between the hours of 6 AM to 6 PM.	Yes
2	Landscape - Limit landscape irrigation to specific days	Landscape may not be watered more often than every third day.	Yes
2	Landscape - Other landscape restriction or prohibition	Commercial nurseries, golf courses and other water-dependent industries are prohibited from watering landscape more often than every other day and between the hours of 10 AM and 4 PM.	Yes
3	Landscape - Prohibit all landscape irrigation	Lawns, landscaping, and other turfs areas may only be watered by bucket.	Yes
3	Landscape - Other landscape restriction or prohibition	Commercial nurseries, golf courses and other water-dependent industries are prohibited from watering landscape more often than every third day and between the hours of 6 AM and 6 PM.	Yes
3	Other	Fire Hydrants are restricted to only firefighting activities.	Yes
NOTES:			

5.5.2 Penalties

Violation of any of the water use restrictions as listed in Table 5-4 will be penalized as follow:

- A first violation will result in the City issuing a written notice to the person in violation.
- A second violation will result in a surcharge in the amount equal to thirty percent of the person's water bill.
- Third and subsequent violations will result in the City installing a flow restricting device of one gallon per minute capacity for services up to one and one-half inch size and comparatively sized restrictors for larger services. The City will charge the person the costs associated with installing the flow restricting device and restoring normal service (Norwalk, Ordinance No. 1378, March 1991).

5.5.3 Consumption Reduction Methods

Table 5-5 lists the consumption reduction methods that will be used to reduce water use in restrictive stages.

Table 5-5: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods

Retail Only: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods		
Stage	Consumption Reduction Methods by Water Supplier ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	Additional Explanation or Reference *(optional)*
1	Expand Public Information Campaign	See Section 4.4 for detail on public education and outreach.
1	Provide Rebates for Turf Replacement	See Section 4.7 for detail on rebate programs.
2	Expand Public Information Campaign	See Section 4.4 for detail on public education and outreach.
2	Provide Rebates for Turf Replacement	See Section 4.7 for detail on rebate programs.
3	Expand Public Information Campaign	See Section 4.4 for detail on public education and outreach.
3	Provide Rebates for Turf Replacement	See Section 4.7 for detail on rebate programs.
NOTES:		

5.6 Impacts to Revenue

During a catastrophic interruption of water supplies, prolonged drought, or water shortage of any kind, the City will experience a reduction in revenue due to reduced water sales. Throughout this period of time, expenditures may increase or decrease with varying circumstances. Expenditures may increase in the

event of significant damage to the water system, resulting in emergency repairs. Expenditures may also decrease as less water is pumped through the system, resulting in lower power costs.

The City receives water revenue from a service charge and a commodity charge based on consumption. The service charge recovers costs associated with providing water to the serviced property. The service charge does not vary with consumption and the commodity charge is based on water usage. Rates have been designed to recover the full cost of water service in the charges. Therefore, the total cost of purchasing water would decrease as the usage or sale of water decreases.

However, there are significant fixed costs associated with maintaining a minimal level of service. The City will monitor projected revenues and expenditures should an extreme shortage and a large reduction in water sales occur for an extended period of time. To overcome these potential revenue losses and/or expenditure impacts, the City may use reserves. If necessary, the City may reduce expenditures by delaying implementation of its Capital Improvement Program and equipment purchases, and/or adjust the work force, implement a drought surcharge, and/or make adjustments to its water rate structure.

5.7 Reduction Measuring Mechanism

The City's supply and demand data are recorded and reviewed regularly. Data will be monitored and compared periodically, and used to measure the effectiveness of any water shortage contingency stage that may be implemented.

The City will follow CBMWD's Plan and other regional guidelines as the City enters into Water Shortage Stages. If Metropolitan or CBMWD calls for extraordinary conservation, Metropolitan's Drought Program Officer will coordinate public information activities directly with the City through CBMWD and monitor the effectiveness of ongoing conservation programs.

Metropolitan will provide CBMWD with water use monthly reports that will compare each member agency's current cumulative retail usage to their allocation baseline. Metropolitan will also provide quarterly reports on its cumulative retail usage versus its allocation baseline.

The City's staff will also participate in regular groundwater producer meetings to monitor groundwater and discuss monthly water allocations. This will enable the City to be aware of groundwater conditions on a timely basis.

6 RECYCLED WATER

Recycled water opportunities have continued to grow in southern California as public acceptance and the need to expand local water resources continues to be a priority. Recycled water also provides a degree of flexibility and added reliability during drought conditions when imported water supplies are restricted.

Recycled water is wastewater that is treated through primary, secondary and tertiary processes and is acceptable for most non-potable water purposes such as irrigation, and commercial and industrial process water per Title 22 requirements.

6.1 Agency Coordination

The City purchases recycled water through CBMWD from Los Angeles County Sanitation District's (LACSD) Los Coyotes Water Reclamation Plant (WRP) located at 16515 Piuma Avenue in Cerritos for non-potable purposes such as landscape irrigation.

6.2 Wastewater Description and Disposal

The City operates and maintains the local sewer collection pipes that feed into the LACSD's trunk sewer system to convey wastewater to LACSD's Los Coyotes WRP where it is treated, recycled, and/or disposed. At various times throughout the year, the City's wastewater is diverted and sent to LACSD's Joint Water Pollution Control Plant (JWPCP) in Carson where it undergoes treatment for disposal. The City's sewer system includes 164 miles of sewer lines ranging from 6 to 8 inches diameter, 16 siphons, more than 2,400 manholes, and three sewer lift stations (Hall & Foreman Inc., Sewer System Management Plan, December 2014).

Treatment at the Los Coyotes WRP includes primary, secondary, and tertiary treatment for wastewater up to 37.5 million gallons per day (MGD). Primary treatment removes heavier solid particles that settle and lighter materials that float from the wastewater. Secondary treatment removes dissolved and suspended organic materials with naturally occurring microorganisms that feed on dissolved organic materials and settle so they are separated from the water. Finally, tertiary treatment consists of filtration and disinfection to remove remaining suspended material and harmful bacteria and viruses. Water that is not beneficially reused from the Los Coyotes WRP is discharged to the San Gabriel River

The JWPCP provides primary and secondary treatment for 400 MGD of wastewater. Following treatment, the water is discharged through a network of outfalls extending one and a half miles off the Palos Verdes Peninsula at a depth of approximately 200 feet.

Table 6-1 summarizes the wastewater collected by the City and transported to LACSD's system in 2015. No wastewater is treated or disposed in the City's service area as LACSD treats and disposes all of the City's wastewater.

Table 6-1: Wastewater Collected Within Service Area in 2015

Retail: Wastewater Collected Within Service Area in 2015					
Wastewater Collection			Recipient of Collected Wastewater		
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected in 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?
Norwalk	Estimated	1,483	LACSD	Los Coyotes WRP / Joint Water Pollution Control Plant	No
Total Wastewater Collected from Service Area in 2015:		1,483			
NOTES:					

6.3 Current Recycled Water Uses

The City's recycled water source comes from LACSD's Los Coyotes WRP that produces approximately 5 MGD of recycled water that is used at over 270 sites throughout the region. The recycled water provides irrigation for schools, golf courses, parks, nurseries and greenbelts as well as industrial use at companies for carpet dying and concrete mixing.

The recycled water produced at the Los Coyotes WRP's undergoes tertiary treatment and denitrification. Tertiary treated water can be used for a wide variety of industrial and irrigation purposes where high-quality, non-potable water can be used.

CBMWD's Ibbetson Century Recycled Water Project serves recycled water to the City's service area. The City meters the recycled water flow into their system. The City provides recycled water for irrigation to five users including: Ramona Park, Morrison School, Johnston School, Corvallis Middle School, and Norwalk High School. The City has been using recycled water since 1994.

Table 6-3 shows the current and projected recycled water use through 2040. The recycled water use is expected to increase slightly in 2020 and remain constant through 2040. The projected 2015 recycled water use from the City's 2010 UWMP was compared to the 2015 actual recycled water use as shown in Table 6-4. The actual recycled water use in 2015 is lower than that projected in 2010.

Table 6-2: Current and Projected Recycled Water Direct Beneficial Use within Service Area (AF)

Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area								
Name of Agency Producing (Treating) the Recycled Water:		LACSD						
Name of Agency Operating the Recycled Water Distribution System:		CBMWD						
Beneficial Use Type	General Description of 2015 Uses	Level of Treatment	2015	2020	2025	2030	2035	2040
Agricultural irrigation								
Landscape irrigation (excludes golf courses)	Parks and Schools	Tertiary	82	90	90	90	90	90
Golf course irrigation								
Commercial use								
Industrial use								
Geothermal and other energy production								
Seawater intrusion barrier								
Recreational impoundment								
Wetlands or wildlife habitat								
Groundwater recharge (IPR)*								
Surface water augmentation (IPR)*								
Direct potable reuse								
Other *(Provide General Description)*								
		Total:	82	90	90	90	90	90
**IPR - Indirect Potable Reuse*								
NOTES:								

Table 6-3: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual (AF)

Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual			
Use Type		**2010 Projection for 2015**	**2015 Actual Use**
Agricultural irrigation			
Landscape irrigation (excludes golf courses)		102	82
Golf course irrigation			
Commercial use			
Industrial use			
Geothermal and other energy production			
Seawater intrusion barrier			
Recreational impoundment			
Wetlands or wildlife habitat			
Groundwater recharge (IPR)			
Surface water augmentation (IPR)			
Direct potable reuse			
Other	*Type of Use*		
Total		102	82
NOTES:			

6.4 Potential Recycled Water Uses

Potential recycled water users are locations where recycled water could replace potable water use. Additional users do not exist at the time and the City does not expect additional recycled water use in the future as shown in Table 6-5

6.4.1 Direct Non-Potable Reuse

The City currently uses recycled water from LACSD's Los Coyotes WRP for direct non-potable reuse such as landscape irrigation.

6.4.2 Indirect Potable Reuse

Carson Advanced Water Treatment Plant

With changing conditions in the CRA and SWP supplies, imported water has continued to be restricted. To maintain a sustainable water supply for Los Angeles and surrounding communities, Metropolitan is determining the feasibility of advanced water treatment of wastewater to be used for groundwater recharge in order to offset a portion of Metropolitan's imported water demand. Metropolitan has partnered with LACSD since 2010 to determine the potential demands, technical and regulatory constraints of indirect potable reuse (IPR), and to estimate costs associated with the system (Metropolitan Board of Directions Special Committee on Desalination and Recycling, March 2010). LACSD's "Status Report on Recycled Water from 2010-2011" presented the advanced water treatment concept as a 200 MGD (224,110 AFY) facility but has since been revised. Pilot scale testing of treatment systems for the

demonstration facility were underway in 2010 with a $33,000 grant from the United States BOR at LACSD's JWPCP in the City of Carson**.** Figure 6-1 shows the JWPCP existing site outlined in yellow, the demonstration facility site, and the proposed location of a full scale plant outlined in red.

Figure 6-1: LACSD JWPCP and Potential Plant Site

On September 21, 2015, Metropolitan representatives presented the "Potential Regional Recycled Water Supply Program" to the Board's Water Planning and Stewardship Committee. The presentation detailed the potential to develop a water supply to recharge groundwater basins and increase the regions water supply portfolio with IPR similar to the Orange County Water District's Groundwater Replenishment System. The program would involve a multi-phased approach with an initial 1 MGD demonstration plant, feasibility studies for full scale facilities, and a financing plan followed by several incremental phases of full scale facilities up to 150 MGD. The full scale facility would produce up to 150 MGD of advanced treated water that would be injected into groundwater basins throughout the Los Angeles region, as shown on Figure 6-2.

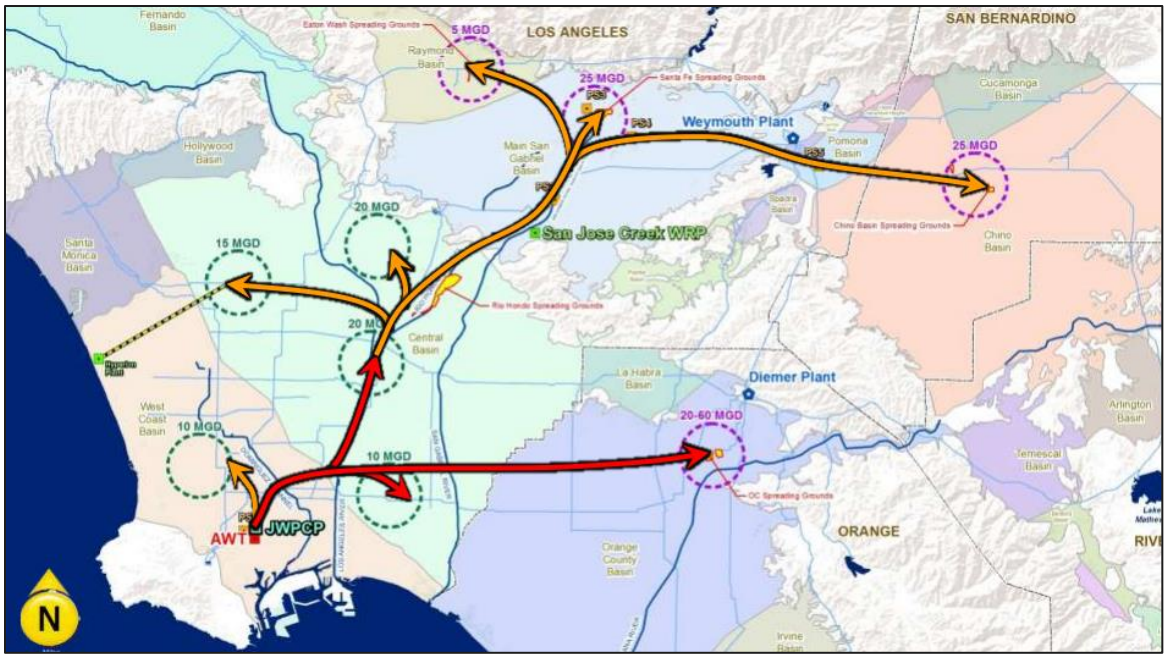

Figure 6-2: Potential Full Scale Recycled Water Program

6.5 Optimization Plan

In other areas of Los Angeles County, recycled water is used for irrigating golf courses, parks, schools, businesses, commercial and industrial uses, and communal landscaping, as well as for groundwater recharge. Analyses have indicated that present worth costs to incorporate recycled water within the City are not cost effective as compared to purchasing imported water from CBMWD, or using groundwater. The City will continue to conduct feasibility studies for recycled water and seek out creative solutions such as funding, regulatory requirements, institutional arrangement and public acceptance for recycled water use with CBMWD, WRD, Metropolitan and other cooperative agencies.

7 FUTURE WATER SUPPLY PROJECTS AND PROGRAMS

7.1 Water Management Tools

Resource optimization such as desalination and IPR minimize the City's and region's reliance on imported water. Optimization efforts are typically led by regional agencies in collaboration with local/retail agencies.

7.2 Transfer or Exchange Opportunities

Interconnections with other agencies result in the ability to share water supplies during short term emergency situations or planned shutdowns of major imported systems. The City maintains seven connections with the City of Santa Fe Springs and City of Cerritos, one imported water connection with Metropolitan, and nine emergency interconnections. The City of Cerritos and Santa Fe Springs connections are located as follows:

- Northeast Sector – connection with City of Santa Fe Springs at Pioneer Boulevard and Lakeland Road
- Northwest Sector – connection with the City of Santa Fe Springs at Orr and Day Road and Cecilia Street
- East Sector – connection with the City of Santa Fe Springs at Rosecrans Avenue and Carmenita Road
- Southeast Sector (Residential) – connection with the City of Cerritos at Alondra Boulevard and Wilder Avenue
- South Sector – connection with the City of Cerritos at 166th Street and Flallon Avenue
- Artesia Sector – connection with the City of Cerritos at Ely Avenue and Carver Lane

Currently, there are no additional transfer or exchange opportunities.

7.3 Planned Water Supply Projects and Programs

The City's 2014 Water Master Plan performed by AKM identifies planned design and construction projects as described below.

Pipeline Replacement – replace approximately 7,700 feet of pipeline in the Central Sector for potable water quality improvement purposes.

Emergency Connection – add emergency potable water connection to Liberty Utilities system in the Southeast Sector.

Phase 3 Projects – These projects will interconnect potable water in the West Sector with the Central and South Sectors and include well rehabilitation and construction of: 2,100 feet of 12-inch well discharge pipeline in Taddy Street and Longworth Avenue, and replace and upsize approximately 3,700 feet of pipeline in Leffingwell Road and Foster Road.

Phase 4 Projects – These projects will include construction of a 1 million gallon reservoir and booster pump station at existing Well 10 site in the Central Sector and modification of the Well 10 pump into new reservoir instead of directly into high pressure pipeline.

Phase 5 Projects – These projects will provide an additional potable water connection between the Central and South Sectors for redundancy and include construction of: approximately 4,000 feet of 16 inch pipeline at Norwalk Boulevard from Mapledale Street to Alondra Boulevard, approximately 3,000 feet of 12 inch pipe at Norwalk Boulevard and 162nd Street from Alondra Boulevard to Hermosillo Park, approximately 1,300 feet of 8 inch pipe in Elaine Avenue from Hermosillo Park to 166th Street, pressure regulating station at Norwalk Boulevard and Alondra Boulevard, and approximately 1,000 feet of pipe in railroad right-of-way from Maidstone Avenue to Baylark Street.

Phase 6 Projects – These projects add an additional source of potable water to the South Sector providing redundancy and include construction of: well at Hermosillo Park, one million gallon reservoir and booster pump station at Hermosillo Park, and approximately 4,400 feet of 16-inch pipeline in Alondra Boulevard from Norwalk Boulevard to Blackburn Avenue.

7.4 Desalination Opportunities

Seawater desalination represents a significant opportunity to diversify the region's water resources with a new, local water supply. The constant availability of ocean water regardless of weather or climate is a key benefit to seawater desalination. Metropolitan supports seawater desalination to its member agencies by providing technical assistance, regional facilitation of research and information exchanges, and financial incentives through the Local Resources Program (LRP).

Metropolitan and its member agencies have considered seawater desalination since the 1960's, but it has been too expensive compared to other water sources until the 1990's when advances were made in membrane technology, energy recovery, and process design. In the early 2000's, several member agencies began pursuing local projects to diversify their resource portfolios and in 2001, Metropolitan created an incentive program, known as the Seawater Desalination Program (SDP), to support seawater desalination projects. In December 2015, San Diego County Water Authority (SDCWA) began operating the largest desalination facility in the country. The 56,000 AF Carlsbad project will meet approximately eight percent of San Diego County's water demand and be a reliable, drought-resistant water source. Several other local water agencies are considering seawater desalination projects.

In 2014, Metropolitan modified the provisions of the LRP to include incentives for locally produced seawater desalination projects that reduce the need for imported supplies. To qualify for the incentive, proposed projects must replace an existing demand or prevent new demand on Metropolitan's imported water supplies. In return, Metropolitan offers two incentive formulas under the program:

- Up to $340 per AF for 25 years, depending on the unit cost of the seawater project cost compared to the cost of Metropolitan supplies
- Up to $475 per AF for 15 years, depending on the unit cost of the seawater project cost compared to the cost of Metropolitan supplies

Brackish groundwater is groundwater with a salinity higher than freshwater, but lower than seawater. Brackish groundwater typically requires treatment using desalters.

7.4.1 Groundwater

There are currently no brackish groundwater opportunities within the City's service area.

7.4.2 Ocean Water

Numerous seawater desalination projects exist that would reduce the region's reliance on imported water. Although none of the projects immediately serve the City's service area, they benefit the region as a whole. A summary of the status of the SDP projects is provided in Metropolitan's 2015 UWMP as shown on Figure 7-1 that could ultimately provide up to 142,000 AFY of new supply. Other local agencies are also considering seawater desalination projects independent of Metropolitan's SDP that are provided in Metropolitan's 2015 UWMP as shown on Figure 7-2 that could ultimately provide up to 360,000 AFY of new supply.

Project	Member Agency Service Area	Capacity Range AF per Year	Status	SDP Agreement
Long Beach Seawater Desalination Project	Long Beach Water Department	10,000	Long-term intake testing	Yes
Doheny Desalination Project	Municipal Water District of Orange County/ South Coast Water District	5,000 – 16,000	Pre-EIR Studies	Yes
Carlsbad Seawater Desalination Project	San Diego County Water Authority	56,000	Operational	No
West Basin Seawater Desalination Project	West Basin Municipal Water District	20,000 – 60,000	Pre-EIR Studies	Yes
Total: Seawater Desalination Projects		**91,000 – 142,000**		

Figure 7-1: Seawater Desalination Projects in Metropolitan's Service Area

Project	Member Agency Service Area	AF per Year	Status
Huntington Beach Seawater Desalination Project	Municipal Water District of Orange County / Orange County Water District	56,000	Permitting
Camp Pendleton Seawater Desalination Project	San Diego County Water Authority	56,000 to 168,000	Planning
Ventura County	Calleguas Municipal Water District	20,000 to 80,000	Feasibility Study
Rosarito Beach	San Diego County Water Authority, Otay Water District	56,000 to 112,000[1]	Feasibility study
Total: Other Potential Projects		**160,000 – 360,000**	

[1] Metropolitan's service area would receive a share of the total supply produced by the project.

Figure 7-2: Other Local Seawater Desalination Projects in Metropolitan's Service Area

8 UWMP ADOPTION PROCESS

Recognizing that close coordination among other relevant public agencies is key to the success of its UWMP, the City worked closely with CBMWD to develop and update this planning document. The City also encouraged public involvement by holding a public hearing for residents to learn and ask questions about their water supply.

This section provides the information required in Article 3 of the Water Code related to adoption and implementation of the UWMP. Table 8-1 summarizes external coordination and outreach activities carried out by the City and their corresponding dates. The UWMP checklist to confirm compliance with the Water Code is provided in Appendix A.

Table 8-1: External Coordination and Outreach

External Coordination and Outreach	Date	Reference
Encouraged public involvement (Public Hearing Notice)	5/3/16, 5/10/16, & 6/6/17	Appendix E & E-1
Notified city or county within supplier's service area that water supplier is preparing an updated UWMP (at least 60 days prior to public hearing)	3/7/16	Appendix E
Held public hearing	5/17/17 & 6/6/17	Appendix E & E-1
Adopted UWMP	5/17/17 & 6/6/17	Appendix F-1
Submitted UWMP to DWR	7/1/16 & 6/7/17	-
Submitted UWMP to the California State Library and city or county within the supplier's service area	7/1/16 & 6/7/17	-
Made UWMP available for public review (no later than 30 days after filing with DWR)	8/1/16 & 7/7/17	-

This UWMP was readopted by the City Council on June 6, 2017. A copy of the adopted resolution is provided in Appendix F-1.

A change from the 2004 legislative session to the 2009 legislative session required the City to notify any city or county within its service area at least 60 days prior to the public hearing. As shown in Table 8-2,

the City sent a Letter of Notification to the County of Los Angeles and the City of Artesia on March 7, 2016 to state that it was in the process of preparing the 2015 UWMP (Appendix E).

Table 8-2: Notification to Cities and Counties

Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
Artesia	☑	☑
County Name	60 Day Notice	Notice of Public Hearing
Los Angeles County	☑	☑
NOTES:		

8.1 Public Participation

The City has encouraged community participation in developing its urban water management planning efforts since the first plan was prepared in 1985. A public meeting was held on May 17, 2016 prior to adopting the original UWMP to review and receive comments on the draft plan before the City Council approval. For this UWMP update, a second public meeting was held on June 6, 2017 to review and receive comments on the amended plan before the City Council approval. DWR does not require notification to cities and counties for the adoption of the amended UWMP.

Notices of first public meetings were published in the local newspaper and posted at City Hall. Copies of the draft plan were available at the City Hall and Library. A copy of the published Notice of Public Hearing is included in Appendix E.

8.2 Agency Coordination

The City's water supply planning relates to the policies, rules, and regulations of its regional and local water providers. The City is dependent on imported water from Metropolitan through CBMWD, its regional wholesaler.

8.3 UWMP Submittal

8.3.1 Review of 2010 UWMP Implementation

As required by California Water Code, the City summarized Water Conservation Programs implemented to date, and compared them to those planned in its 2010 UWMP.

8.3.2 Comparison of 2010 Planned Water Conservation Programs with 2015 Actual Programs

The City's commitment to implement Best Management Practice (BMP)-based water use efficiency program continues today. For the City's specific achievements in the area of conservation, please see Section 4 of this Plan for detailed information.

8.3.3 Comparison of 2010 Projected Recycled Water Use with 2015 Actual Use

Current recycled water use for the City in 2015 was about 26 percent less than previously forecasted for 2015 in the 2010 UWMP, as illustrated in Table 6-4.

8.3.4 Filing of 2015 UWMP

The City Council reviewed the Final Draft Plan on May 2, 2017. The five-member City Council approved the 2015 UWMP on May 2, 2017. See Appendix F-1 for the resolution approving the Plan.

By July 1, 2016, the City's Adopted 2015 UWMP was filed with DWR, California State Library, County of Los Angeles, and cities within its service area, if applicable. The amended 2015 UWMP was refiled with the same agencies on June 7, 2017.

REFERENCES

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Water Systems Optimization, 2016. California Department of Water Resources: Water Audit Manual.

APPENDIX A

UWMP Checklist

APPENDIX B

Standardized Tables

APPENDIX C

Groundwater Reports

APPENDIX D

City Resolution

APPENDIX E

Notification of Public and Service Area Suppliers

APPENDIX F

Adopted UWMP Resolution

APPENDIX G

AWWA Water Loss Audit Worksheet

APPENDIX H

SB X7-7 Verification Form

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