CITY OF EL SEGUNDO

2015 Urban Water Management Plan

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ES Executive Summary

The Urban Water Management Planning Act (Act) requires every urban water supplier providing water for municipal purposes to more than 3,000 customers, or supplying more than 3,000 acre-feet of water annually, to prepare and adopt an Urban Water Management Plan (UWMP). The Act also requires urban water suppliers to update the UWMP in years ending in five and zero, using a 20-year planning horizon. The City of El Segundo (City), has prepared this UWMP in accordance with all requirements set forth in the State of California Water Code Sections 10610 through 10657.

The City is a retail water supplier to both residential and commercial customers. This UWMP describes the water system and includes a description of the water supply sources, historical and projected water use, and a comparison of water supply to water demands during normal, single dry, and multiple dry years. This Plan also addresses the Water Conservation Act of 2009 (SBx7-7) requirements, including the City's 2015 interim and 2020 water use targets and the implementation plan for meeting the City's 2020 targets.

ES.1 SERVICE AREA OVERVIEW

The City is located in the Los Angeles Basin, approximately 1.5 miles south of Los Angeles International Airport (LAX). The area is a semi-arid desert environment receiving less than 14 inches of rainfall annually. The City manages and operates the domestic water system that serves a residential population of approximately 17,000. The residential population of the City is expected to increase marginally over the next 25 years as the residential areas are virtually built-up with no substantial vacant land available for development.

The water system consists of approximately 57.5 miles of main pipelines and serves potable water to a 5.5 square mile area. The City's water system is comprised of one pump station, two storage reservoirs, and one elevated storage tank. There are currently two available water supply sources; imported water from the Colorado River and State Water Project (SWP) (delivered via the West Basin Municipal Water District (WBMWD)) and recycled water for landscaping irrigation and industrial use (also supplied by the WBMWD). In addition, there are four interconnections with three neighboring water agencies; Los Angeles Department of Water and Power (LADWP), City of Manhattan Beach, and California Water Service, that can be activated during emergency situations.

ES.2 System Water Use

Key factors that affect City water demands are population growth, increases in land use development, industrial growth and reductions in annual rainfall. For the City, population and rainfall have historically exhibited the greatest influence. Usage of water per capita per day ranged primarily between 450 and 600 Gallons per Capita per Day (GPCD) during 2001 to 2010 and has since been trending lower. Consequently, Fiscal Year (FY) 2014 to 2015 had the lowest per capita water use in the past 15 years. Consumption has ranged from a low of 427 GPCD in 2015 to a maximum of 801 GPCD in 2001. The average use per day during the period from 2001 through 2015 was 508 gallons per person.

In FY 2014 to 2015, the City used 8,025 acre-feet of potable water, as measured by metered sales and estimated distribution system losses. Average water deliveries, are broken down into the following sectors

- Single Family Residential
- Multi-Family Residential
- Commercial
- Institutional/government
- Industrial
- Landscape Irrigation
- Other (fire, estimated distribution system losses)

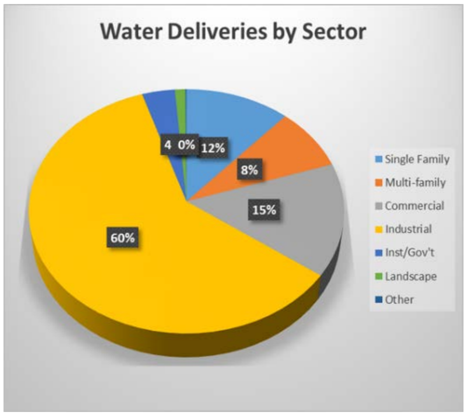


Table ES.1: Demands for Potable Water - 2015 Actual

Water Use Sectors	Additional Description	Level of Treatment When Delivered	Volume
Single Family	-	Drinking Water	925
Multi-Family	-	Drinking Water	662
Commercial	-	Drinking Water	1,192
Industrial	-	Drinking Water	4,794
Institutional/Governmental	-	Drinking Water	291

Water Use Sectors	Additional Description	Level of Treatment When Delivered	Volume
Landscape	-	Drinking Water	93
Losses	Distribution System Losses (estimated using AWWA Water Loss Audit Worksheet)	Drinking Water	64
Other	Firefighting	Drinking Water	4
		TOTAL	8,025

Note: Units in acre-feet per year

ES.3 SB X7-7

In order to determine the twenty percent per capita water use reduction by the year 2020 required by SBx7-7, the City utilized the California Department of Water Resources (DWR) methods to determine the baseline, interim, and water use target values. The City is part of the WBMWD that has formed a regional alliance, and has thus determined its baseline and target values both individually and as part of the alliance. The individually calculated baseline for the City is 513 GPCD, the interim target in 2015 is 462 GPCD, and the target for 2020 compliance is 411 GPCD. The actual 2015 GPCD is 427. Therefore, the City has successfully met the 2015 interim goal and will continue to implement water conservation measures in order to meet the 2020 target goal.

Table ES.2: Baselines and Targets Summary

Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	2001	2010	513	462	411
5 Year	2006	2010	492		

Note: All values are in Gallons per Capita per Day (GPCD)

Table ES.3: 2015 Compliance - Optional Adjustments to 2015 GPCD

Actual 2015 GPCD*	2015 Interim Target GPCD*	Adjusted 2015 GPCD*	2015 GPCD* *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015? Y/N
427	462	427	427	Yes

Note: All values are in Gallons per Capita per Day (GPCD)
Note: Values were determined utilizing the Methodology 8 document

ES.4 Water Supply Systems

The City utilizes both potable and recycled water. The City is 100% dependent on imported water purchased from WBMWD for its potable water supply and does not anticipate using groundwater as a source of potable water. In addition to distributing potable water, the City is part of WBMWD's recycled water system. The recycled water is used for industrial applications and irrigation.

Due to the slow rising population and the per capita demand reduction required by SBx7-7, projected water supplies needs are expected to decrease from 2015 to 2035. The total projected potable and recycled water supplies available to the City through WBMWD are shown in Table ES-4.

Table ES.4: Water Supplies - Current and Projected

Water Supply Sources	2015	2020	2025	2030	2035
West Basin Municipal Water District	8,127	7,999	8,157	8,318	8,482
Recycled Water	9,336	9,336	9,336	9,336	9,336
Total	17,463	17,335	17,493	17,654	17,818

Note: Values were obtained from the West Basin Municipal Water District Water Use Report - Fiscal Year 2014-2015.
Note: Units in acre-feet per year

ES.5 WATER SUPPLY RELIABILITY

All potable and recycled water supplies are provided through the WBMWD, which is supplied through the Metropolitan Water District of Southern California (MWD) from the Colorado River and the SWP. Since the supply is not directly obtained by the City, the determination of reliability is largely determined by WBMWD and MWD analyses to provide a consistent water supply to the City during normal, single dry, and multiple dry years. Both WBMWD and MWD have declared the water supply reliable on both district's 2015 UWMPs.

Table ES.5: Supply and Demand Comparison — Normal Year

	2020	2025	2030	2035
Supply Totals	16,587	16,744	16,904	17,067
Demand Totals	16,586	16,744	16,903	17,067
Difference	1	0	1	0

Notes: Units are in acre-feet per year

Table ES.6: Supply and Demand Comparison — Single Dry Year

	2020	2025	2030	2035
Supply Totals	17,250	17,414	17,580	17,750
Demand Totals	17,249	17,414	17.579	17,750
Difference	1	0	1	0

Notes: Units are in acre-feet per year

Table ES.7: Supply and Demand Comparison — Multiple Dry-Year Events

		2015	2020	2025	2030
Multiple-dry year first year supply	**Supply Totals**	17,748	17,916	18,087	18,262
	Demand Totals	17,747	17,916	18,086	18,262
	Difference	1	0	1	0
Multiple-dry year second year supply	**Supply Totals**	18,246	18,418	18,594	18,774
	Demand Totals	18,245	18,418	18,593	18,774
	Difference	1	0	1	0
Multiple-dry year third year supply	**Supply Totals**	18,743	18,921	19,102	19,286
	Demand Totals	28,742	18,921	19,100	19,286
	Difference	1	0	1	0

Notes: Units are in acre-feet per year

ES.6 Water Shortage Contingency Planning

Catastrophic failures that put the water supply at risk, i.e. fires and earthquakes, could damage the infrastructure of the water distribution system. In the event of a catastrophic event that prevents the City from obtaining water for distribution, WBMWD implements actions and methods to continue supplying water to customers of its member agencies. Water reserves are available to MWD through Diamond Lake, as well as other surface reservoirs. It is estimated MWD could provide full supply for up to six months for all of its service areas following a catastrophic event. In addition, methods to ensure that water is continually supplied to customers include stockpiling emergency pipeline repair materials and coordinating with the California Governor's Office of Emergency Services (Cal OES) and County's Operations Area in the event of a disruption in water supply.

Any effect felt by the WBMWD during a catastrophic event would impact the water supply to the City as well. As a result, the City is subject to the actions and rationing of WBMWD. During any kind of catastrophic event that disrupts the water supply, including a regional power outage or an earthquake, the City, in conjunction with WBMWD and MWD, are prepared to continue providing a reliable source of water.

ES.7 DEMAND MANAGEMENT MEASURES

The City works with the WBMWD to implement water conservation techniques to reduce the total demand of water throughout the City and WBMWD. Together, the City and WBMWD implement the seven required Demand Management Measures (DMMs) within the City. WBMWD is a signatory on the California Urban Water Conservation Council (CUWCC) Memorandum of Understanding (MOU) regarding urban water conservation in California. CUWCC represents a diverse group of water supply agencies dedicated to establishing Best Management Practice (BMP) guidelines toward implementing conservation measures and managing supply demands. The following table summarizes correlation between the BMPs/DMMs. DMM 7 for other DMMs provided by the City, is not included on the table as it is universally applicable.

Table ES.8: CUWCC BMP Organization and Names and UWMP DMMs

Category	BMP #	BMP Name	DMM #	DMM Name
BMP 1: Utility Operations	1.1	Operations Practices	5	Programs to Assess and Manage Distribution System Real Loss
	1.2	Water Loss Control	1	Water Waste Prevention Ordinances
	1.3	Metering with Commodity Rates	2	Metering
	1.4	Retail Conservation Pricing	3	Conservation Pricing
BMP 2: Public Education and School Education	2	Public Education and School Education	4	Public Education and Outreach
			6	Water Conservation Program Coordination and Staffing Support
BMP 3: Residential Programs	3	Residential Programs	3	Conservation Pricing

Category	BMP #	BMP Name	DMM #	DMM Name
			4	Public Education and Outreach
			6	Water Conservation Program Coordination and Staffing Support
BMP 4: Commercial, Industrial, and Institutional	4	Commercial, Industrial, and Institutional	3	Conservation Pricing
			4	Public Education and Outreach
			6	Water Conservation Program Coordination and Staffing Support
BMP 5: Landscape	5	Landscape	3	Conservation Pricing
			6	Water Conservation Program Coordination and Staffing Support

ES.8 PLAN ADOPTION

The plan was adopted by the City Council on August 9, 2016 as prepared. A copy of the adoption resolution is provided in Appendix B.

The City will implement the strategies set forth in the plan immediately upon adoption by the City Council, which includes the following to reduce water demands in accordance with SBx7-7:

- Enhance public awareness regarding water conservation requirements and efforts that can be easily implemented to conserve water.
- Continue to promote and expand the water conservation programs currently in place, including the fourteen Demand Management Measures outline in Section 6.0 of this Plan.
- Reduce the number of illegal connections that withdraw water from the City's distribution system and contribute to the system losses.

The City will submit copies of its 2015 UWMP to the following agencies within 30 days after adoption:

- DWR
- The California State Library
- The City

Additionally, any amendments or changes to the plan will be submitted to the above agencies within 30 days after adoption.

The City will provide an electronic version of the final 2015 UWMP on its website for public review within 30 days of filing the plan with DWR. Additionally, a hard copy will be available for review at the City Hall building, located at 350 Main Street, El Segundo, California 90245.

1 INTRODUCTION & OVERVIEW

1.1 INTRODUCTION

The California State Legislature passed AB 797, the Urban Water Management Planning Act (Act) of 1983, which became effective January 1, 1984. The Act requires every urban water supplier providing water for municipal purposes to more than 3,000 customers, or supplying more than 3,000 acre-feet of water annually, to prepare and adopt an Urban Water Management Plan (UWMP). The act also requires urban water suppliers to update the UWMP in years ending in five and zero using a 20 to 25 year planning horizon. The City of El Segundo (City), a retail water supplier, fits the defined criteria and has prepared this UWMP addressing the requirements set forth in the State of California Water Code Sections 10610 through 10657.

Since its passage, many amendments have been added to the Act. These changes are intended to encourage increased regional planning and the cooperative management of California's most precious commodity - water. As a result, UWMPs have evolved to become:

- Foundation documents and sources of information for Water Supply Assessments and Written Verification of Water Supply,
- Long range planning documents for water supply,
- Source data for the development of regional water plans,
- Source documents for cities and counties preparing their General Plans, and
- Key components of Integrated Regional Water Management Plans.

For the City, the benefits of updating the UWMP extend beyond legislative compliance. This document is a reference document intended to complement other UWMPs by analyzing conservation issues and the water supply available to the City. An effective UWMP aimed at developing a greater level of water conservation, awareness, and reliability requires the coordinated efforts on key tasks by the Department of Water Resources (DWR), West Basin Municipal Water District (WBMWD), and City residents. This document also summarizes the current and proposed water management activities performed by the City to provide dependable, adequate and safe water. The UWMP further identifies proposed projects with a description of resulting water costs, benefits, and implementation schedule.

Specifically, the goals of this plan are:

- To provide a local perspective on current and proposed water conservation programs,
- To review current conservation programs and efforts,
- To evaluate potential conservation methods and identify improvements, as appropriate to the City programs,
- To provide a general framework for the development of mechanisms for coping with both short-term and long-term deficiencies in regional and/or local water supplies, and
- To serve as a flexible plan that can be updated periodically to reflect changes in regional and local trends, conditions and conservation policies (at least once every five years in accordance with Section 10621 and 10644 of AB 797).

In compliance with the State mandate and accordance with the best practices of water management, the City has prepared this UWMP.

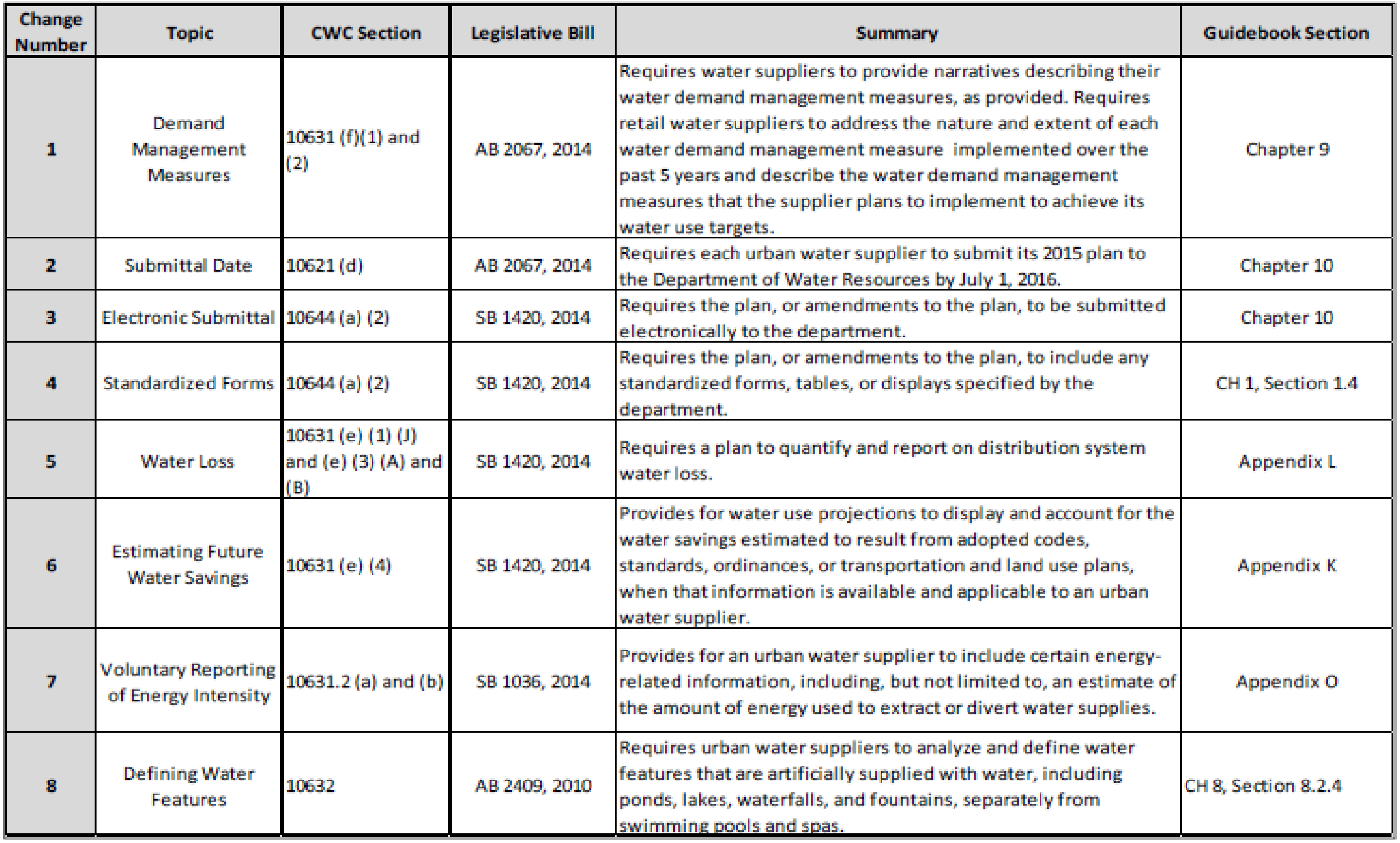
1.2 REGULATORY CHANGES

The California Water Code changes since 2010 are summarized below, and details of the changes can be found in the 2015 UWMP Guidebook Appendix C. See Figure 1.2.1 below for a matrix of changes.

- Demand Management Measures CWC Section 10631 (f) (1) and (2) Assembly Bill 2067, 2015 Urban Water Management Plans Guidebook for Urban Water Suppliers, Chapter 9
- Submittal Date CWC Section 10621 (d) Assembly Bill 2067, 2015 Urban Water Management Plans Guidebook for Urban Water Suppliers, Chapter 10
- Electronic Submittal CWC Section 10644 (a) (2) Senate Bill 1420, 2015 Urban Water Management Plans Guidebook for Urban Water Suppliers, Chapter 10
- Standardized Forms CWC Section 10644 (a) (2) Senate Bill 1420, 2015 Urban Water Management Plans Guidebook for Urban Water Suppliers, Chapter 10
- Water Loss CWC Section 10631 (e) (1) (J) and (e) (3) (A) and (B) Senate Bill 1420, 2015 Urban Water Management Plans Guidebook for Urban Water Suppliers, Appendix L
- Estimating Future Water Savings CWC Section 10631 (e) (4) Senate Bill 1420, 2015 Urban Water Management Plans Guidebook for Urban Water Suppliers, Appendix K

- Voluntary Reporting of Energy Intensity CWC Section 10631.2 (a) and (b) Senate Bill 1036, 2015 Urban Water Management Plans Guidebook for Urban Water Suppliers, Appendix O
- Defining Water Features CWC Section 10632 (b) Assembly Bill 2409, 2010 Guidebook Chapter 4

Figure 1.2.1 – Table of Changes Since 2010[1]



Change Number	Topic	CWC Section	Legislative Bill	Summary	Guidebook Section
1	Demand Management Measures	10631 (f)(1) and (2)	AB 2067, 2014	Requires water suppliers to provide narratives describing their water demand management measures, as provided. Requires retail water suppliers to address the nature and extent of each water demand management measure implemented over the past 5 years and describe the water demand management measures that the supplier plans to implement to achieve its water use targets.	Chapter 9
2	Submittal Date	10621 (d)	AB 2067, 2014	Requires each urban water supplier to submit its 2015 plan to the Department of Water Resources by July 1, 2016.	Chapter 10
3	Electronic Submittal	10644 (a) (2)	SB 1420, 2014	Requires the plan, or amendments to the plan, to be submitted electronically to the department.	Chapter 10
4	Standardized Forms	10644 (a) (2)	SB 1420, 2014	Requires the plan, or amendments to the plan, to include any standardized forms, tables, or displays specified by the department.	CH 1, Section 1.4
5	Water Loss	10631 (e) (1) (J) and (e) (3) (A) and (B)	SB 1420, 2014	Requires a plan to quantify and report on distribution system water loss.	Appendix L
6	Estimating Future Water Savings	10631 (e) (4)	SB 1420, 2014	Provides for water use projections to display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans, when that information is available and applicable to an urban water supplier.	Appendix K
7	Voluntary Reporting of Energy Intensity	10631.2 (a) and (b)	SB 1036, 2014	Provides for an urban water supplier to include certain energy-related information, including, but not limited to, an estimate of the amount of energy used to extract or divert water supplies.	Appendix O
8	Defining Water Features	10632	AB 2409, 2010	Requires urban water suppliers to analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	CH 8, Section 8.2.4

[1] Source: 2015 Urban Water Management Plans Guidebook for Urban Water Suppliers, Appendices – Appendix C

1.3 PLAN ORGANIZATION

The chapters in this UWMP have been organized to correspond to the outline of the California Department of Water Resources' "2015 Urban Water Management Plans Guidebook for Urban Water Suppliers". Additionally, the sequence used to present the information may be different from that shown in the Act in order to present the material in a manner reflecting the unique conditions within the City's service area. This UWMP is organized according to the following chapters:

1

INTRODUCTION & PLAN PREPARATION

Chapter 1 describes organization of the 2015 UWMP, discussion on the importance and extent of the City's water management planning efforts.

2

PLAN PREPARATION

Chapter 2 describes the City's process of developing the UWMP, including stakeholder involvement and the coordination with key stakeholders.

3

SYSTEM DESCRIPTION

Chapter 3 describes the City service area, including the climate and demographics, and also provides an overview of the water system facilities.

4

SYSTEM WATER USE

Chapter 4 documents historical and projected water use including use by sector within the City's service area.

5

BASELINE AND TARGETS

Chapter 5 outlines the baseline and target per capita water use reduction values, demand projection calculations and the method used to develop these projections. This chapter also demonstrates whether or not the City have achieved the 2015 interim water use target, and their plans for achieving their 2020 water use target.

6

SYSTEM SUPPLIES

Chapter 6 outlines the sources of water within the City service area, including documentation regarding wholesale water, groundwater, recycled water, desalination, and transfer and exchange opportunities.

7

WATER SUPPLY RELIABILITY

Chapter 7 outlines the reliability of their water supply and project reliability out 20 years. This includes documentation of the three dry year scenarios.

8

WATER SHORTAGE CONTINGENCY PLANNING

Chapter 8 outlines the City's Water Shortage Contingency Plan, mandatory prohibitions, penalties or charges for excessive use, revenue and expenditure impacts, and mechanisms to determine reductions in water use.

9

DEMAND MANAGEMENT MEASURES

Chapter 9 describes the water conservation programs implemented by the City in an effort to reduce water usage in its service area.

10

PLAN ADOPTION

Chapter 10 briefly outlines the steps taken to adopt and submit the UWMP and make it publicly available. This chapter also discusses the agency's plan to implement the UWMP.

1.4 COORDINATION

> ***Urban Water Management Planning Act Requirement:***
>
> *CWC 10608.56*
>
> *(a) On and after July 1, 2016, an urban retail water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.*
>
> *(c) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for achieving the per capita reductions. The supplier may request grant or loan funds to achieve the per capita reductions to the extent the request is consistent with the eligibility requirements applicable to the water funds.*
>
> *(e) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval documentation demonstrating that its entire service area qualifies as a disadvantaged community.*
>
> *(f) The department shall not deny eligibility to an urban retail water supplier or agricultural water supplier in compliance with the requirements of this part and Part 2.8 (commencing with Section 10800), that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the requirements of this part or Part 2.8 (commencing with Section 10800).*

The City ensured that the 2015 UWMP is completed and submitted in accordance to CWC 10608.56 sections a, c, e and f to ensure that the City is eligible for any water management grant, loan, or other State funding. The City has maintained its latest UWMP on file at the City's offices in El Segundo, California.

2 PLAN PREPARATION

2.1 Basis for Preparing a Plan

Urban Water Management Planning Act Requirement:

CWC 10617 "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems…

CWC 10620(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

CWC 10621(a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero, except as provided in subdivision (d).

(d) Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.

The City of El Segundo (City) is required to prepare an Urban Water Management Plan (UWMP) since it supplies water to more than 3,000 customers within its service area and supplies more than 3,000 acre-feet of water annually.

Public Water Systems

Urban Water Management Planning Act Requirement:

CWC 10644(a)(2) The plan, or amendments to the plan, submitted to the department … shall include any standardized forms, tables, or displays specified by the department.

CWC 10608.52(a) The department, in consultation with the board, the California Bay-Delta Authority or its successor agency, the State Department of Public Health, and the Public Utilities Commission, shall develop a single standardized water use reporting form to meet the water use information needs of each agency, including the needs of urban water suppliers that elect to determine and report progress toward achieving targets on a regional basis as provided in subdivision (a) of Section 10608.28.

(b) At a minimum, the form shall be developed to accommodate information sufficient to assess an urban water supplier's compliance with conservation targets pursuant to Section 10608.24… The form shall accommodate reporting by urban water suppliers on an individual or regional basis as provided in subdivision (a) of Section 10608.28.

California Health and Safety Code 116275

(h) "Public Water System" means a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year.

The City's 2010 UWMP utilized the Department of Water Resources (DWR) standardized forms, tables, or displays. This use of these forms, tables or displays is continued throughout the 2015 UWMP.

The City uses a public water system and this is required to complete the UWMP as well as submit to the DWR. Table 2.1.1 shows the City's Public Water System (PWS) information. The City will be submitting required information through the Water Use Efficiency Online Tool, as required for the 2015 UWMP.

Table 2.1.1: Public Water Systems

Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015 (acre-feet)
CA1910040	City of El Segundo	4,767	17,463
	TOTAL	4,767	17,463

Agencies Serving Multiple Service Areas/Public Water Systems

The City only provides water within its service area and therefore this subsection is not applicable.

2.2 Regional Planning

The City will not be participating in a regional 2015 UWMP. Please see next section.

2.3 Individual or Regional Planning and Compliance

As stated in section 2.2, the City will not be participating in a regional 2015 UWMP; however, the City has developed stand-alone UWMPs since 2005 and will do so for the 2015 update. The goal of this UWMP is to address all the requirements of the California Water Code (CWC). As part of this effort, the agency notified and coordinated with the West Basin Municipal Water District (WBMWD) and Los Angeles County.

Table2.3.1: Plan Identification

☒	Individual UWMP	
☐	Regional UWMP (RUWMP)	
	Choose One:	
	☐	RUWMP includes a Regional Alliance
	☐	RUWMP does not include a Regional Alliance

2.4 Fiscal or Calendar Year and Units of Measure

> ***Urban Water Management Planning Act Requirement:***
> *CWC 10608.20 (a) (1) Urban retail water suppliers… may determine targets on a full fiscal year or calendar year basis..*

Fiscal or Calendar Year

The City uses Fiscal Years for it's database. Information regarding agency type, year basis and unit of measure used is presented on Table 2.4.1 below.

Table 2.4.1: 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 Day that the Fiscal Year Begins	
Day	1-Jun
Units of Measure Used in UWMP (select one)	
☒	Acre Feet (AF)
☐	Million Gallons (MG)
☐	Hundred Cubic Feet (CCF)

2.5 Coordination and Outreach

> ***Urban Water Management Planning Act Requirement:***
>
> *CWC 10631(j) An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).*

Wholesale and Retail Coordination

The City is 100% dependent on imported water purchased through West Basin Muncipal Water District for its potable water supply.

Table 2.5.1: Water Supplier Information Exchange

The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
Wholesale Water Supplier Name
West Basin Municipal Water District

Coordination with Other Agencies and the Community

> ***Urban Water Management Planning Act Requirement:***
>
> *CWC 10620(d)(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.*

The City ensured the preparation of the 2015 UWMP was coordinated with the appropriate water and public agencies. The West Basin Municipal Water District, and the County of Los Angeles were encouraged to participate in the Plan development.

> ***Urban Water Management Planning Act Requirement:***
>
> *CWC 10642 Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.*

The City realizes the importance different social, cultural, and economic elements within its service area can have on the quality and success of its plan and water conservation efforts. The City encouraged all members of the public to attend the public hearing, and the City solicited written input from the public.

Notice to Cities and Counties

> ***Urban Water Management Planning Act Requirement:***
>
> *CWC 10621(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.*

The City sent notification letters to the following agencies approximately 60 days prior to the public hearing:

- County of Los Angeles
- West Basin Municipal Water District

A copy of the letter is available in Appendix A, as well as the distribution addresses.

3 SYSTEM DESCRIPTION

3.1 SERVICE AREA PHYSICAL DESCRIPTION

Urban Water Management Planning Act Requirement:

CWC 10631(a) Describe the service area of the supplier.

The City of El Segundo ("City") is located in the Los Angeles Basin on the coast approximately 1.5 miles south of LAX airport. Water is considered a limited natural resource given the climate, with the majority of domestic water imported from as far away as the Colorado River and Northern California. Due to the potential for Colorado River supplies to be reduced because of Federal requirements, the Metropolitan Water District of Southern California and its member agencies, including the West Basin Municipal Water District (WBMWD), may need to look to other sources to supply their customers with water.

The City's residents and businesses consume an average of 7 million gallons of water per day. Water conservation represents the most cost-effective and environmentally sound way to reduce current and future demand. Reclaimed or recycled water is used for landscape irrigation, park and school ground irrigation, industrial use, and for groundwater recharge. Landscaping with drought-tolerant plants represents another effective method to help conserve water. Gardening accounts for a large percentage of residential water use. Drought-tolerant plants, shrubs, and trees are specially adapted to grow well in regions that get little, or infrequent amounts of normal rain. These plants that require less water to live in Southern California's climate and soil tend to be more pest and disease resistant. The City has long promoted efficient water use through education, public information, and municipal water management programs.

Water System Overview

The City manages and operates the domestic water system. The City's water system serves a residential population of approximately 17,000. The system consists of approximately 57.5 miles of main pipelines and serves potable water to a 5.5 square mile area. The City's water system is comprised of one pump station, two storage reservoirs, and one elevated storage tank. There are currently two available water supply sources; imported water from the Colorado River as well as State Water Project supplies and recycled water for landscaping irrigation and industrial use supplied by the WBMWD. In addition, there are four interconnections with three neighboring water agencies; Los Angeles Department of Water and Power (LADWP), City of Manhattan Beach, and California Water Service, that can be activated during emergency situations. The City obtains approximately 52 percent of its water supply from WBMWD surface water, and 48 percent from recycled water, as is described in their 2005 Water Master Plan. Table 3.1.1 and 3.1.2 summarize the specifications of the aforementioned facilities as well as import capacity.

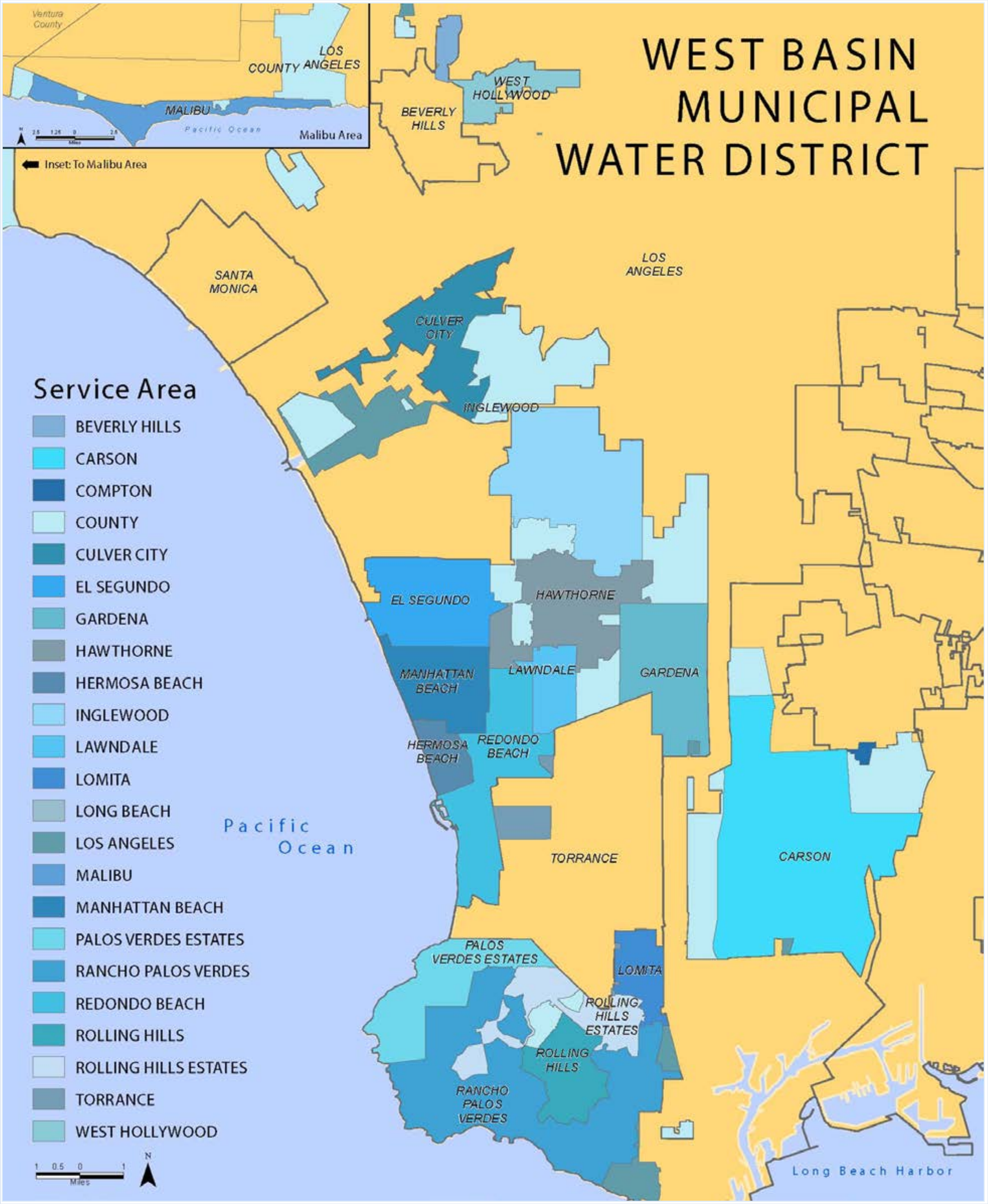
Table 3.1.1: System Facility Summary

RESERVOIRS		BOOSTER PUMP STATIONS	
TYPE	**CAPACITY**	**PUMP**	**TYPE/CAPACITY**
In-ground Reservoir	6.3 & 3 MG	Elevated Tank Pump House	2 Electric Pumps / 2000 GPM
Elevated Tank	0.2 MG	Elevated Tank Pump House	Emergency Natural / Gas Pump 5000 GPM
Total Reservoir	**9.5 MG**	**Total Pump Capacity**	**7000 GPM**

Table 3.1.2: Import Capacity

WEST BASIN MUNICIPAL WATER DISTRICT		EMERGENCY CONNECTIONS
CONNECTION	**CAPACITY**	LADWP (Imperial Ave. and Sheldon)
West Basin #3 MWD	40 CFS	LADWP (Imperial Highway and Nash)
West Basin #28 MWD	160 CFS	West Basin #3 Interconnection with Manhattan Beach
Total Capacity	**200 CFS**	California Water Service

Figure 3.1.1 – The City of El Segundo Regional Location[1]



[1] From the West Basin Municipal Water District Urban Water Management Plan

3.2 SERVICE AREA CLIMATE

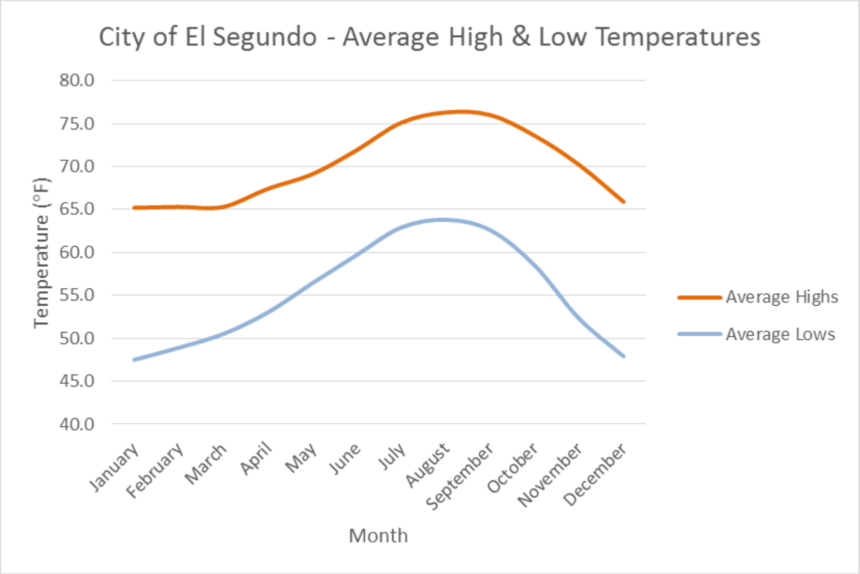
Urban Water Management Planning Act Requirement:

CWC 10631(a) Describe the service area – climate.

Temperature

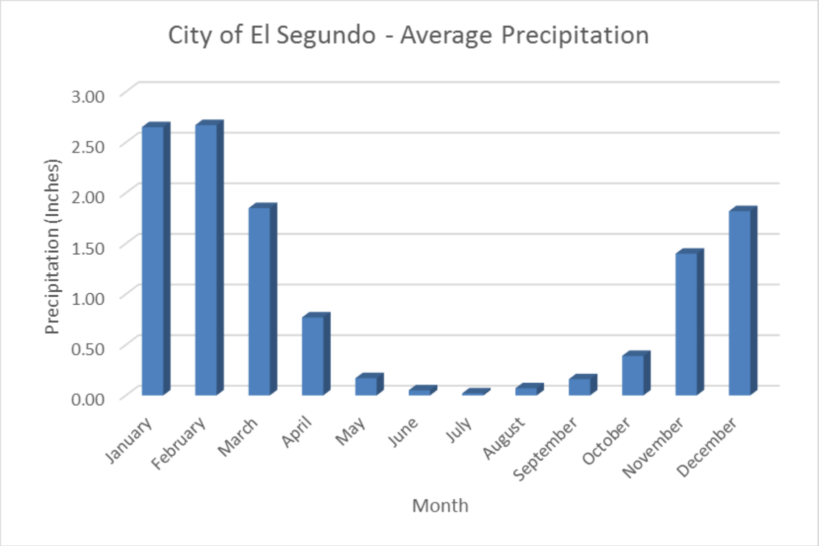
The City, which is a part of the Los Angeles Basin is a semi-arid desert environment. The temperature range is generally moderate as depicted in Figure 3.2.1; the average high temperature is 70.1 °F and the average minimum annual temperature is 55.3 °F.

Figure 3.2.1 – Average Temperatures



Precipitation

Figure 3.2.2 – Average Precipitation



The City, like the rest of the basin, receives less than 14 inches of rainfall annually. The average annual monthly precipitation in the City is presented in Figure 3.2.2.

Additionally, seasonal variation in temperature, rainfall, and evapotranspiration rate are illustrated in Table 3.2.1.

Table 3.2.1: Climate Data[1] (Period Record: 1/1/1936 – 1/20/2015)

	Avg. High Temp. (°F)	Avg. Low Temp. (°F)	Avg. Precipitation (In.)	Avg. (ETo)[2]
January	65.2	47.5	2.65	0.93
February	65.3	48.9	2.67	1.40
March	65.3	50.5	1.85	2.48
April	67.4	53.0	0.77	3.30
May	69.1	56.4	0.17	4.03
June	71.9	59.7	0.05	4.50
July	75.1	62.9	0.02	4.65
August	76.3	63.8	0.07	4.03
September	76	62.6	0.16	3.30
October	73.6	58.5	0.39	2.48
November	70.2	52.3	1.40	1.20
December	65.9	47.9	1.82	0.62
Annual	70.1	55.3	12.02	33.0

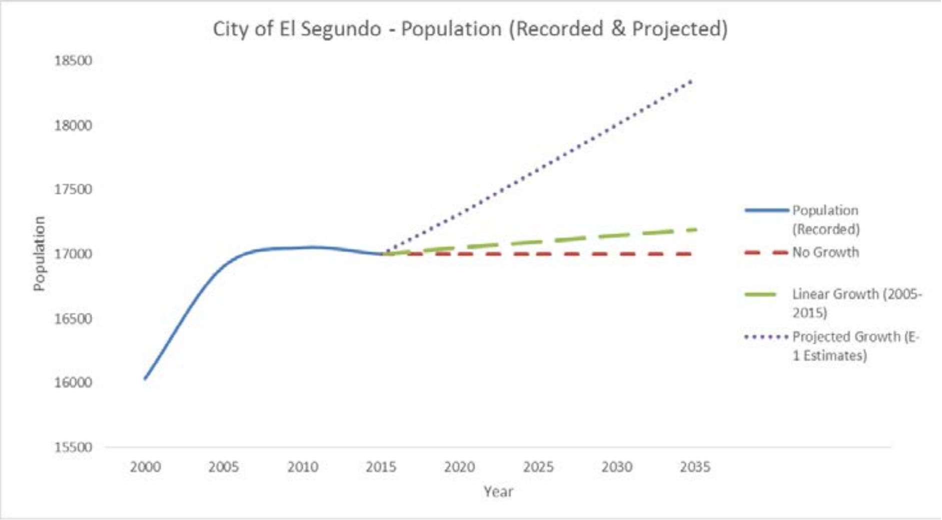
Sources: (1) Western Regional Climate Center: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5114
(2) CIMIS : http://wwwcimis.water.ca.gov – Santa Monica Station

3.3 SERVICE AREA POPULATION

Urban Water Management Planning Act Requirement:

CWC 10631(a) Describe the service area – current and projected population … The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier … (population projections) shall be in five-year increments to 20 years or as far as data is available.

Figure 3.3.1 – Projected Population Growth



The City can be viewed as two distinct elements; the residential areas and the commercial/ industrial areas. At the present time, The City's residential areas are virtually built-up with no substantial vacant land available for development. The City's commercial/industrial areas are over 90 percent developed. Therefore, the residential population is expected to only marginally increase over the next 25 years. Table 3.3.1 details modest residential population growth for the City's service area in 5-year increments, starting from 2015 and projecting to 2035. Additionally, Figure 3.3.1 illustrates the projected population growth for the same time period.

Table 3.3.1: Population — Current and Projected

	2015	2020	2025	2030	2035	Data source
Service Area Population[1]	17,000	17,313	17,654	18,002	18,357	California DOF E-1 Estimates (5/1/2015) used with exponential growth

[1] Service area population is defined as the population served by the distribution system.

3.4 OTHER DEMOGRAPHIC FACTORS

Urban Water Management Planning Act Requirement:

CWC 10631(a) Describe the service area – other demographic factors affecting the supplier’s water management planning

The City’s economy has numerous aviation-related and petroleum-related industries and operations. In 1911, Chevron began its second refinery; the name El Segundo, Spanish for "The Second," which is the primary user of recycled water within the City.

In 1930, the Los Angeles International Airport opened north of the City, which has led to the concentration of aerospace and aviation-related firms in the area. Many large aerospace companies have facilities in the City, including Boeing, Raytheon, Lockheed Martin, Northrop Grumman, and The Aerospace Corporation, which is headquartered there. It is also home to the Los Angeles Air Force Base and the Space and Missile Systems Center (SMC), which is responsible for space-related acquisition for the military.

4 SYSTEM WATER USE

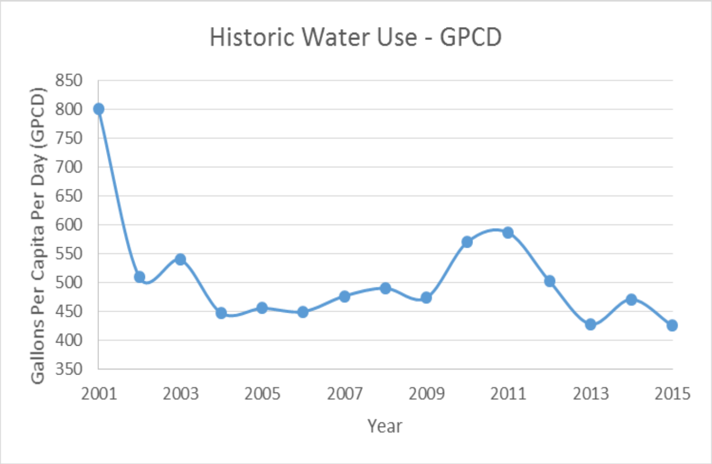
4.1 WATER USE

Urban Water Management Planning Act Requirement:

10608.20(e)(1)&(2) Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a)), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses: (A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; (I) Agricultural.

Historic Water Use

Figure 4.1.1 – Historic Water Use



The City of El Segundo's (City) Water System currently serves approximately 17,000 people within its service area. With the City being almost completely built-out, significant growth or increase in water demands are not anticipated in future years.

Key factors that affect water demands are; population growth, increases in land use development, industrial growth and reductions in annual rainfall. For the City, population and rainfall exhibit the greatest influence. Usage of water per capita per day ranged primarily between 450 – 600 Gallons per Capita per Day (GPCD) during the 2001 – 2010 baseline period and has since been trending lower, as shown in Figure 4.1.1, with 2015 having the lowest per capita water use in the past 15 years. Consumption has ranged from a low of 427 GPCD in 2015 to a maximum of 801 GPCD in 2001. The average use per day during the period from 2001 through 2015 was 508 gallons per person.

Table 4.1.1: Historic Water Use

Fiscal Year	Gross Water Use (MGY)	Population	Usage Per Capita Day (GPCD)
2001	4,734	16,200	801
2002	3,041	16,363	509
2003	3,251	16,506	540
2004	2,711	16,612	447
2005	2,767	16,649	455
2006	2,725	16,600	450
2007	2,877	16,599	477
2008	2,960	16,547	490
2009	2,866	16,581	472
2010	3,464	16,650	570
2011	3,571	16,690	586
2012	3,074	16,757	503
2013	2,631	16,834	428
2014	2,905	16,903	471
2015	2,650	17,000	427

Note: Million Gallons per Year (MGY)

The City’s past water use and number of customer connections for the 2005 and 2010 calendar years are shown in Table 4.1.2 and Table 4.1.3, respectively.

Table 4.1.2: Water Deliveries — Actual, 2005

Water use sectors	Metered		Not Metered		Total
	# of Accounts	Volume	# of Accounts	Volume	Volume
Single family	3,056	3,278	0	0	3,278
Multi-family	680	806	0	0	806
Commercial/Institutional/ Government	378	556	0	0	556
Industrial/Landscape/Other	N/A	3,714	0	0	3,714
Agriculture	0	0	0	0	0
Total	**4,114**	**8,354**	**0**	**0**	**8,354**

Note: Units in acre-feet per year

Table 4.1.3: Water Deliveries — Actual, 2010

Water use sectors	Metered		Not metered		Total
	# of accounts	Volume	# of accounts	Volume	Volume
Single family	3,279	2,453	0	0	2,453
Multi-family	592	1,363	0	0	1,363
Commercial/Institutional/ Government	479	2,407	0	0	2,407
Industrial	475	3,692	0	0	3,692
Landscape	0	0	0	0	0
Agriculture	0	0	0	0	0
Other	N/A	15	0	0	15
Total	**4,825**	**9,929**	**0**	**0**	**9,929**

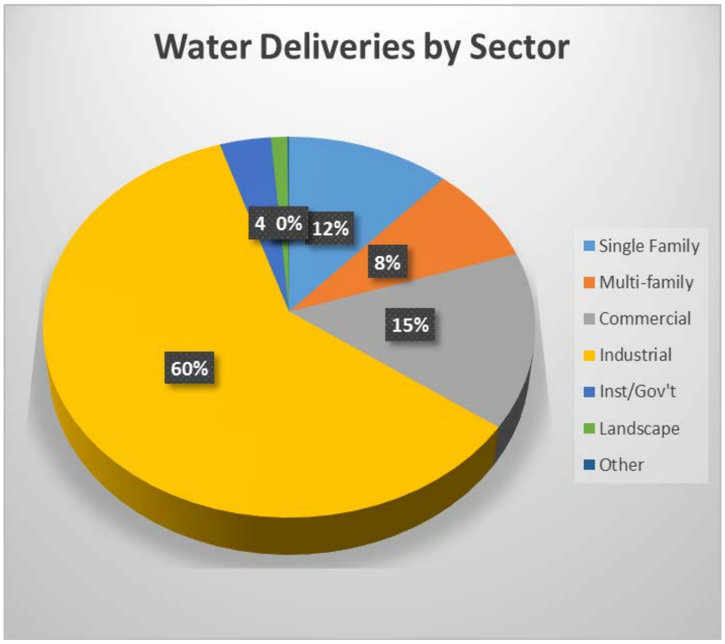
Note: Units in acre-feet per year

Current and Projected Water Use by Sector

In Fiscal Year (FY) 2014-2015, the City used 8,025 acre-feet of potable water, as measured by metered sales and estimated distribution system losses. Average water deliveries, shown in Figure 4.1.2, are broken down into the following sectors:

- Single Family Residential
- Multi-Family Residential
- Commercial
- Institutional/government
- Industrial
- Landscape Irrigation
- Other (fire, estimated distribution system losses)

Figure 4.1.2 –Water Deliveries



Retail water deliveries are projected for the next 20 years, in five year increments, and are broken down by sector. The future estimations of water use (by sector) are extrapolated based on the current (2015) values, anticipated population growth, and the Interim (2015) and Final (2020) Target Water Use Reduction Goals.

Residential Sector

Table 4.1.5 provides estimates for the projected residential water demand for the City. Due to the lack of available space, the City does not have plans for significant new residential development in the near future. In the next 20 years, some form of residential redevelopment may occur; however, such development is not expected to place a heavy demand on the City's water supply.

Commercial/Institutional/Government Sectors

Current and projected water demands for the City's commercial and institutional/governmental sectors are shown in Tables 4.1.4 – 4.1.5.

Industrial Sector

Industrial water demand accounts for a majority of the water use in the City. In FY 2014-2015, industrial users accounted for greater than 60% of the sales, with 4,794 acre feet (AF) of water delivered. The Chevron El Segundo Refinery is the largest single customer, accounting for approximately 70% of the industrial water demand for FY 2014-2015. The current and projected industrial water demands are shown in Tables 4.1.4 and 4.1.5.

Landscape Sector

The current and projected water demands for landscape irrigation are shown in Tables 4.1.4 and 4.1.5. Considering the implementation of the Water Conservation in Landscaping Ordinance No. 1437, included in Appendix G of this report, and the City's robust recycled water system, landscape irrigation is expected to remain stable throughout the planning horizon.

Agricultural Sector

The City does not provide potable water for agricultural uses.

Other

The City's firefighting water use is included in the *Other* category, and its projections are included in Tables 4.1.4 and 4.1.5.

Distribution System Losses

The City's distribution system losses were estimated using FY 2014-2015 data and the American Water Works Association (AWWA) water audit methodology and software. Distribution system losses were then projected for the next 20 years using the current ratio of water losses to total water deliveries (0.8%). Refer to Appendix I for the complete AWWA Water Audit Software calculations and Section 4.1.4 for more information.

Table 4.1.4: Demands for Potable Water - 2015 Actual

Water Use Sectors	Additional Description	Level of Treatment When Delivered	Volume
Single Family	-	Drinking Water	925
Multi-Family	-	Drinking Water	662
Commercial	-	Drinking Water	1,192
Industrial	-	Drinking Water	4,794
Institutional/Governmental	-	Drinking Water	291
Landscape	-	Drinking Water	93
Losses	Distribution System Losses (estimated using AWWA Water Loss Audit Worksheet)	Drinking Water	64
Other	Firefighting	Drinking Water	4
		TOTAL	8,025

Note: Units in acre-feet per year

Table 4.1.5: Demands for Potable Water - Projected

Water Use Sectors	Additional Description	Projected Water Use			
		2020	2025	2030	2035
Single Family	-	922	941	959	978
Multi-Family	-	660	673	686	700
Commercial	-	1,188	1,212	1,236	1,260
Industrial	-	4,778	4,873	4,969	5,067
Institutional/Governmental	-	290	295	301	307
Landscape	-	93	94	96	98
Losses	Distribution System Losses (estimated using AWWA Water Loss Audit Worksheet)	64	65	67	68
Other	Firefighting	4	4	4	4
	TOTAL	**7,999**	**8,157**	**8,318**	**8,482**

Note: Units in acre-feet per year

Sales to Outside Agencies

The City does not sell wholesale water to other agencies. Table 4.1.6 is provided to quantify that the City does not intend to sell water to other water agencies within the planning period.

Table 4.1.6: Sales to Other Water Agencies

Water Distributed	2015	2020	2025	2035	2040
Not Applicable	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**

Note: Units in acre-feet per year

Distribution System Water Losses

Urban Water Management Planning Act Requirement:

CWC 10631(e)(1) Quantify, to the extent records are available, past and current water use over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors, including but not necessarily limited to, all of the following uses: …

(J) Distribution system water loss

(3)(A) For the 2015 urban water management plan update, the distribution system water loss shall be quantified for the most recent 12-month period available. For all subsequent updates, the distribution system water loss shall be quantified for each of the five years preceding the plan update.

(B) The distribution system water loss quantification shall be reported in accordance with a worksheet approved or developed by the department through a public process. The water loss quantification worksheet shall be based on the water system balance methodology developed by the American Water Works Association.

Distribution system water losses were quantified for FY 2014-2015 using the Department of Water Resources Water Audit Method, calculated by subtracting the total metered deliveries for the year from the total water volume into the system (imported water) less any change in system storage, adjusted for meter accuracy. The worksheets can be found in Appendix I. In FY 2014-2015, distribution system losses were approximately 0.8% of total retail water deliveries. Current system losses are summarized in Table 4.1.7, and projected system losses are included in Table 4.1.5.

Table 4.1.7: 12 Month Water Loss Audit Reporting

Reporting Period	Volume of Water Loss*
07/2014 - 06/2015	64.4

Note: Units in acre-feet per year
Note: Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.

Total Water Demands

The total past, current, and future water demands for the City are summarized in Table 4.1.8.

Table 4.1.8: Total Water Demands

Water Type	2015	2020	2025	2030	2035
Potable *From Tables 4.1.4 and 4.1.5*	8,025	7,999	8,157	8,318	8,482
Recycled Water Demand *From Table 6-4*	9,300	9,300	9,300	9,300	9,300
Total Water Demand	**17,325**	**17,299**	**17,457**	**17,618**	**17,782**

Note: Units in acre-feet per year

Water Use for Lower Income Households

> ***Urban Water Management Planning Act Requirement:***
>
> *10631.1(a) The water use projections required by Section 10631 shall include projected water use for single-family and multi-family residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.*

The Housing Element of the City's General Plan was used to obtain lower income housing data, and these residential water demands were projected for the next 20 years by determining: a) the number of lower income single-family and multi-family housing units projected for the service area; and, b) estimating the future water use for these lower income housing units. According to the 2013 Draft Housing Element Update, the projected total single-family and multi-family housing units required for extremely low-, very low- and low-income households were 29 dwelling units. The future water use for these units was then estimated using current and 20x2020 target per capita water use values and the average household size for the City, as obtained from 2010 Census data. The low-income projected water use estimates are given in Table 4.1.9 and are also included in the total projected water use shown in Tables 4.1.5 and 4.1.8.

Table 4.1.9: Low-Income Projected Water Demands

Low Income Water Demands	2020	2025	2030	2035
Single-family residential	2.0	2.0	2.0	2.1
Multi-family residential	1.4	1.4	1.5	1.5
Total	**3.4**	**3.4**	**3.5**	**3.6**

Note: Units in acre-feet per year

Estimating Future Water Savings

> ***Urban Water Management Planning Act Requirement:***
>
> *10631 (e)(4)(A) If available and applicable to an urban water supplier, water use projections may display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area. (B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following: (i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections (ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.*

The City did not consider future water savings when projecting water use, which is reflected in Table 4.1.10.

Table 4.1.10: Inclusion in Water Use Projections

Are Future Water Savings Included in Projections? (Refer to Appendix K of DWR Guidebook)	Are Lower Income Residential Demands Included In Projections?
No	Yes

4.2 WATER DEMAND PROJECTIONS

Urban Water Management Planning Act Requirement:

10631(k) Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

The City relies on wholesale water from the West Basin Municipal Water District (WBMWD) as its sole source of potable water. Table 4.2.1 is provided to quantify the district demand projections provided to WBMWD for incorporation into the WBMWD's Urban Water Management Plan for average year conditions.

Table 4.2.1: Retail Agency Demand Projections Provided to Wholesale Suppliers

Wholesaler	2020	2025	2030	2035
WBMWD	7,999	8,157	8,318	8,482
Total	**7,999**	**8,157**	**8,318**	**8,482**

Note: Units in acre-feet per year

4.3 WATER USE REDUCTION PLAN

Urban Water Management Planning Act Requirement:

CWC §10608.29 Urban wholesale water suppliers shall include in the urban water management plans … an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part (10608.36). Urban retail water suppliers are to prepare a plan for implementing the Water Conservation bill of 2009 requirements and conduct a public meeting which includes consideration of economic impacts.

In order to meet the 20x2020 water use targets calculated in Chapter 5, the City has collaborated with WBMWD as part of a regional alliance to develop individual Water Use Efficiency Master Plans for each member agency. The City's plan was completed in May 2011. Table 4.3.1 identifies several key programs already identified for implementation that will help the City achieve or even go beyond the required water use targets. These projects have been implemented during the period of 2010-2015 and some of them will continue beyond 2015.

Table 4.3.1: Water use Reduction Program

Program Description	Implementation (Y/N)
Metropolitan	
Residential Rebate Program	Y
Save A Buck Rebate Program	Y
West Basin	
High-Efficiency Toilet (HET) Distribution Events	Y
Green Living for Apartments and Condos (Direct HET Installations)	Y
Ocean Friendly Landscape Program	Y
Complete Restroom Retrofit Program	Y
Recirc & Save Program	Y
Cash for Kitchens	Y
Education Programs	Y
Water & Energy Efficiency in the Motel/Hotel and Schools Sectors	Y
Greywater Workshops	Y
Rain Barrel Distribution Events	Y
Regional Landscape Water Efficiency Program (Turf Removal)	Y
Landscape Irrigation Efficiency Program (LIEP)	Y
Car Wash Coupon Program	Y
Weather-Based Irrigation Controller (WBIC) Events	Y
Home Depot Plant Sales	Y
West Basin Programs (Funding Pending)	
High-Efficiency Nozzle Program	Y
Water Star Schools Pilot Program	Y
Greywater Workshops	Y
Other Water Retailer	
Turf Removal Program	N
HET Rebates (CII)	N
Landscape Surveys	N
Education Programs	Y
Landscape Incentives	N

5 SB X7-7 Baselines and Targets

5.1 WATER CONSERVATION BILL OF 2009 - BASELINES AND TARGETS

Urban Water Management Planning Act Requirement:

10608.20(e) An urban retail water supplier shall include in its urban water management plan … due in 2010 the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.

In order to improve the Sacramento-San Joaquin Delta, in 2008 Governor Schwarzenegger directed State water agencies to develop a plan to achieve a twenty percent per capita water use reduction by the year 2020. The Water Conservation Act of 2009 (Senate Bill X7-7), passed in November 2009, provided the legislative framework to implement the conservation goals, and required retail water suppliers to detail their strategy for achieving the reduction requirement in their 2010 Urban Water Management Plan Updates. For 2015, water agencies may update their 2020 Target and may change the target method from the one used in 2010. The Urban Water Management Planning Act and SB X7-7 can be found in Appendices C and D of this document, respectively.

Explicit methodologies were developed by the California Department of Water Resources (DWR) to assist retail water suppliers in complying with the Water Conservation Act of 2009, and they are detailed in the technical document, *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use,* DWR, February 2016. The City of El Segundo (City) utilized the DWR methods when determining its baseline, interim, and water use target values (20x2020 targets), the steps of which are described in detail in the *Methodologies* document, Appendix J. A summary of the calculations is provided in DWR's SB X7-7 Verification Form, Appendix K.

Water suppliers are given the option of determining their 20x2020 target values either individually, or through a regional alliance. The City is part of the West Basin Municipal Water District that has formed a regional alliance, and has thus determined its baseline and target values both individually and as part of the alliance. The City's individual target values are provided in this section. The regional alliance's values can be found in the West Basin Municipal Water District's 2015 Urban Water Management Plan (UWMP) Update.

For the 2015 UWMP Update, DWR determined that significant discrepancies existed between the Department of Finance (DOF) projected populations for 2010 (based on 2000 U.S. Census data) and actual populations for 2010, based on 2010 U.S. Census data (released in 2012). Therefore, the City recalculated its baseline population numbers for years 2001 – 2010 during the 2015 UWMP Update using 2000 and 2010 Census data. A summary of the revised baselines and targets is provided in Table 5.1.1.

Table5.1.1: Baselines and Targets Summary

Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	2001	2010	513	462	411
5 Year	2006	2010	492		

Note: All values are in Gallons per Capita per Day (GPCD)

Compliance Year 2015 – Interim Water Use Target

Table 5.1.2 on the following page summarizes the City's compliance year 2015 water use, which illustrates that the City has met its 2015 Interim Target and is currently on track to achieve its 2020 target.

Table 5.1.2: 2015 Compliance - Optional Adjustments to 2015 GPCD

Actual 2015 GPCD*	2015 Interim Target GPCD*	Extraordinary Events*	Economic Adjustment*	Weather Normalization*	TOTAL Adjustments*	Adjusted 2015 GPCD*	2015 GPCD* *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015? Y/N
427	462	0	0	0	0	427	427	Yes

Note: All values are in Gallons per Capita per Day (GPCD)
Note: Values were determined utilizing the Methodology 8 document

6 SYSTEM SUPPLIES

6.1 WATER SOURCES

Urban Water Management Planning Act Requirement:

10631 (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).

The City of El Segundo (City) utilizes both potable and recycled water. The City obtains its potable water from a single source: purchased through the West Basin Municipal Water District (WBMWD), who in turn receives the water through the Metropolitan Water District of Southern California (MWD). The City purchased a total of 8,127 acre-feet (AF) of potable water for a population of approximately 17,000 in Fiscal Year (FY) 2014-2015. In addition to distributing potable water, the City is part of WBMWD's recycled water system. The City delivered 9,336 AF of recycled water in FY 2014-2015 for landscape irrigation and industrial purposes; however, the majority (over 90%) of this recycled water was distributed to a single customer: the Chevron Refinery located within the City. Due to the slow rising population and the per capita demand reduction required by SBX7-7, imported water needs are expected to remain relatively stable from 2015 to 2035, with a projected increase of only 6% over the 20-year planning horizon. Due to the lack of planned expansions to the City's recycled water system, recycled water needs are also expected to remain stable. More information comparing the projected water supply and demand can be found in Chapter 7.

Although the City overlies the West Coast Subbasin, one of the four subbasins of the Coastal Plain of Los Angeles Basin, the City does not anticipate using groundwater as a source of potable water. Currently, the City is 100% dependent on imported water from WBMWD and MWD for its potable water supply. WBMWD's 2015 Urban Water Management Plan (UWMP) Update has identified plans to reduce its imported water use by 17% within the next 20 years through diversifying its water sources; namely developing a full scale ocean water desalination plant and expanding recycled water use. Desalination and recycled water are discussed in more detail in subsequent sections.

The total current and projected potable and recycled water supplies available to the City through WBMWD are shown in Tables 6.1.1 and 6.1.2. The projected values are based on the estimated demands outlined in Table 4.1.5 for the next 20 years. Water desalination is not reported in Table 6.1.1 because WBMWD will be the operator of the desalination plant. Although the City may purchase desalinated water, it will be part of the overall purchased water supply from WBMWD, and therefore will be accounted for in the City's imported water supply and not through desalination.

Table 6.1.1: Water Supplies - Actual

Water Supply	Additional Detail on Water Supply	2015	
		Actual Volume	Water Quality
Purchased or Imported Water	Purchased from WBMWD.	8,127	Drinking Water
Recycled Water	Provided by WBMWD.	9,336	Recycled Water
	Total	17,463	

NOTES: Values were obtained from the West Basin Municipal Water District Water Use Report - Fiscal Year 2014-2015.

Table 6.1.2: Water Supplies - Projected

Water Supply	Additional Detail on Water Supply	2020 Reasonably Available Volume	2025 Reasonably Available Volume	2030 Reasonably Available Volume	2035 Reasonably Available Volume
Purchased or Imported Water	WBMWD	7,999	8,157	8,318	8,482
Recycled Water	WBMWD	9,336	9,336	9,336	9,336
	Total	17,335	17,493	17,654	17,818

Wholesale Water Supply

Water for use in the City is purchased through the WBMWD. According to its FY 2014-2015 Water Use Report, 60% of WBMWD's supply is from imported sources, 19% from groundwater, and the remainder is recycled water, desalination, and conservation efforts. However, WBMWD does not supply groundwater to retail agencies. Rather, agencies within the WBMWD's service area rely on groundwater production to meet a portion of their retail demand.

The majority of water supplied to WBMWD is from MWD as part of the State Water Project (SWP). The SWP is a series of reservoirs, aqueducts, and pumping facilities that convey water from Northern to Southern California. The water for use within the City is collected and delivered to MWD via the SWP and Colorado River and is fully treated at the Weymouth Filtration Plant, where it is then transferred to WBMWD. In 2015, MWD delivered approximately 113,000 AF of water to WBMWD, of which 8,127 AF was sold to the City for distribution. The quality of the imported water is shown in the following table:

Table 6.1.3: Quality of Imported Water

Constituent	Colorado River Water (mg/L)	State Water Project Water (mg/L)
Chloride	81	80
Sulfate	217	48
Hardness (as $CaCO_3$)	278	116
Total Dissolved Solids	569	295

Notes: Data taken from the West Basin FY 2013-2014 Watermaster Report

The City has provided the following estimates for water supplies in order to meet demands. The findings from the MWD 2015 UWMP Update have confirmed that projected supplies under the single dry-year and multiple dry-year conditions would be sufficient to meet expected demands from member agencies from 2020 through 2040.

Table 6.1.4: Wholesale Supplies — Existing and Planned Sources of Water

Wholesale Sources	Contracted Volume	2020	2025	2030	2035
West Basin Municipal Water District	Yes	7,999	8,157	8,318	8,482

Notes: Units are in acre-feet per year

Recycled Water Supply

The City provides recycled water for multiple uses throughout its service area, including tertiary water (Title 22) for irrigation and industrial uses, nitrified water for industrial cooling towers, pure reverse osmosis (RO) water for refinery low-pressure boiler feed water; and, ultra-pure RO water for refinery high-pressure boiler feed water. The City's recycled water system is discussed in detail in Section 6.5.

6.2 GROUNDWATER

Urban Water Management Planning Act Requirement:

10631 (b)(1) If groundwater is identified as an existing or planned course of water available to the supplier provide…a copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

10631 (b)(2) If groundwater is identified as an existing or planned course of water available to the supplier provide…a description of any groundwater basin or basins from which the urban water supplier pumps groundwater.

10631 (b)(2) For those basins for which a court or the board has adjudicated the rights to pump groundwater, provide a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.

10631 (b)(2) For basins that have not been adjudicated, (provide) information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

10631 (b)(3) (Provide a) detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

10631 (b)(4) (Provide a) detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

Groundwater is not a source of potable water to the City, and therefore this section of the UWMP is not applicable. The City currently leases its 953 acre-feet per year (AFY) of water rights from the adjudicated West Coast Basin to the Golden State Water Company, and the City has no plans to begin pumping groundwater to supplement its supply due to water quality issues resulting from seawater intrusion.

Table 6.2.1 is provided for completeness below; however, it is intentionally left blank as groundwater is not pumped by the City.

Table 6.2.1: Groundwater Volume Pumped

☒ Supplier does not pump groundwater.
The supplier will not complete the table below.

Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
	TOTAL	0	0	0	0	0

6.3 TRANSFER OPPORTUNITIES

Urban Water Management Planning Act Requirement:

10631 (d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

WBMWD and MWD seek out opportunities for water transfer and exchanges to ensure reliability within their respective service areas. Water transfers and exchanges help water suppliers distribute water effectively to areas with limited water supplies. For example, the MWD accepts water through the SWP and Colorado River for distribution throughout Southern California. The City, although not directly involved in the planning of these opportunities, may benefit from additional water supplies as a result of MWD and WBMWD’s efforts in securing water transfers and exchanges. Information on new transfer and exchange opportunities to the MWD and WBMWD can be found in their respective 2015 UWMPs.

6.4 DESALINATED WATER OPPORTUNITIES

Urban Water Management Planning Act Requirement:

10631 (i) Describe the opportunities for development of desalinated water, including but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

The City is not currently exploring the possibility of using desalinated water as a water source independently. However, WBMWD has been testing the feasibility of a seawater desalination plant over the last ten years to determine if desalinated water can be used as a high quality and reliable potable water source. In addition, MWD is also supporting various agencies in determining the feasibility of using desalinated water as a water source. As an end user of water supplied through WBMWD and MWD, the City may receive water, or benefit in other ways (i.e. increased supplies and reliability), as a result of these efforts in discovering the opportunity for seawater desalination. Therefore, a brief description of WBMWD and MWD’s efforts in desalination are discussed.

WBMWD Desalination Project

With recent advances in membrane and reverse osmosis technologies, seawater desalination has become cost competitive with MWD imported water, and therefore has become economically feasible. To capitalize on this, WBMWD began a pilot project in 2002 to determine if seawater desalination was technically feasible. The pilot project, which ran for seven years, was located at the El Segundo Power Plant within the City. Using microfiltration pretreatment and reverse osmosis, the plant was capable of desalting approximately 20 gallons per minute of raw ocean water. The goals of the project, as identified by the WBMWD 2010 UWMP, were to identify optimal performance conditions and evaluate the water quality characteristics. Throughout the operation, water quality tests were extensively conducted to determine if the desalinated water met all applicable water quality standards. It was determined that the plant could consistently and reliably produce high quality potable water that met drinking water standards.

The next step towards developing desalinated water was to initiate a full scale project. In 2009, WBMWD received all necessary permits to commence construction on of a full scale demonstration desalination plant. The plant was able to produce 50,000 gallons per day of potable water and operated until 2014. This plant was used to develop a design basis for future desalination plants that can provide potable water. Currently, the WBMWD is developing an Environmental Impact Report (EIR) for a full scale ocean water desalination facility, with a planned capacity of 21,500 AFY and online date of June 2023.

MWD Desalination Support

In 2001, MWD created the Seawater Desalination Project (SDP) to explore the potential for using seawater as a long term water supply. The SDP provided incentives for its member agencies to develop water through desalination; up to $250 per AF for all produced supplies. Since its inception, MWD has entered into agreements with its member agencies to fund three local seawater desalination projects amounting to 46,000 AFY of potential production. In October 2014, MWD added seawater desalination projects into its Local Resources Program (LRP), replacing the SDP program and increasing the incentives to $340 for produced supplies (recycled water, recovered groundwater and desalinated seawater). As of 2016, eight seawater desalination projects are in the feasibility, planning or construction stages, according to the MWD 2015 UWMP Update. Table 6.4.1 shows the projected supplies provided by these seawater desalination plants.

Table 6.4.1: Current Desalination Projected Capacities

Project	Member Agency	Projected Capacity (AFY)	Status
Carlsbad Seawater Desalination Project	San Diego County Water Authority	56,000	Operational
Huntington Beach Seawater Desalination Project	Municipal Water District of Orange County	56,000	Permitting
Long Beach Seawater Desalination Project	Long Beach Water Department	10,000	Long-term intake testing
Doheny Desalination Project	Municipal Water District of Orange County / South Coast Water District	5,000 – 16,000	Pre-EIR Studies
West Basin Seawater Desalination Project	West Basin Municipal Water District	21,500	EIR Process
Rosarito Beach	San Diego County Water Authority, Otay Water District	56,000 – 112,000	Feasibility Study
Camp Pendleton Seawater Desalination Project	Municipal Water District of Orange County / Orange County Water District	56,000	Permitting
Ventura County	Calleguas Municipal Water District	20,000 – 80,000	Feasibility Study
Total		280,500 – 407,500	

6.5 RECYCLED WATER OPPORTUNITIES

Urban Water Management Planning Act Requirement:

10633 Provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.

The City is committed to potable water conservation through the treatment and distribution of recycled water for non-potable uses. This effectively decreases the potable water that must be purchased through WBMWD and MWD, and is a significant part in the statewide effort to conserve and manage potable water resources. The City receives recycled water from the WBMWD's recycled water system, which was originally constructed in the early 1990's. Since then, the West Basin has become an industry leader in water re-use.

WBMWD purchases treated wastewater from the Hyperion Wastewater Treatment Plant. Hyperion, located in the City of Los Angeles, has served to clean wastewater from Los Angeles County for over 100 years. Throughout its history, Hyperion has been upgraded to meet increasing wastewater treatment demands and all regulatory requirements for treated wastewater. The Hyperion plant does not treat wastewater to recycled water standards; therefore, WBMWD has an agreement to purchase secondary treated wastewater from the Hyperion Plant so that it may be treated further to acceptable recycled water standards. The wastewater is then sent to the Edward C. Little Water Recycling Facility (ECLWRF), a water reclamation plant that can treat effluent from the Hyperion plant to recycled water standards for distribution throughout WBMWD's service area.

In FY 2014-2015, WBMWD distributed 29,110 AF of recycled water, according to the WBMWD's *FY 2014-2015 Water Use Report*. Over the last ten years, WBMWD has distributed over 238,000 AF of recycled water, helping to preserve the region's drinking water supplies. For more information of the WBMWD's recycled water system, refer to the WBMWD's 2015 UWMP update.

Urban Water Management Planning Act Requirement:

10633 (a) (Describe) the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

The City maintains its own wastewater division, which is responsible for the collection of wastewater and the maintenance of the sewer system and transportation lines. The sewer system is split into two portions; the portion of the sewer system located to the west of Sepulveda Boulevard flows to the Hyperion Treatment Plant in Los Angeles; while the area to the east of Sepulveda Boulevard flows through the system to the Los Angeles County Sanitation District (LACSD) District No. 5 and on to the Joint Water Pollution Control Plant (JWPCP) located in the City of Carson. The Hyperion Treatment Plant and JWPCP both provide secondary treatment prior to discharging the effluent into the ocean. In addition, the WBMWD purchases approximately 9% of Hyperion's secondary effluent for treatment at the ECLWRF to recycled water standards.

Upon collection of wastewater from the Cities of Los Angeles County, wastewater initially is sent through bars and screens to remove large solids, such as branches, plastics and rags. Wastewater is then sent to primary treatment. Primary treatment refers to the stage where inorganic particles that could not be removed by the initial screening are removed. In this stage, water is collected in long underground tanks that act similar to a river. Light materials will flow to the top and heavier materials will sink to the bottom. Both the light and heavier materials can be removed and are sent for disposal.

The primary treated water is then sent to the next stage: secondary treatment. Secondary treatment acts as a biological treatment step to reproduce what naturally occurs in water treatment in rivers. The same microorganisms that feed on dissolved organic particles during natural water treatment are used in secondary treatment. Cryogenic oxygen from the air is supplied at a concentration of 94% to create an ideal feeding environment for the microorganisms, decreasing the overall time required for treatment. As the microorganisms complete the feeding process, they sink to the bottom and are removed to be reused in another batch of wastewater. After secondary treatment, the wastewater can be discharged to the ocean.

A portion of the secondary effluent produced at the Hyperion plant is purchased by WBMWD and sent to ECLWRF where it can be treated further to recycled water standards. Here, the wastewater undergoes tertiary treatment, a final stage where water is sent through filters to remove any last suspended particles in the water. The filters contain layers of anthracite coal, sand, and gravel. Once sent through the filters, the water is disinfected. Chlorine from the disinfection process must be removed prior to use. Following the disinfection process and the removal of excess chlorine, water is safe for use and is distributed to the customers of the WBMWD reclaimed water system.

Urban Water Management Planning Act Requirement:

10633 (b) (Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

Approximately one-third of the wastewater collected by the LACSD sewer system and around 9% of the Hyperion Treatment Plant's effluent is treated to tertiary standards, as described above, and can be used as recycled water. The remainder is treated to secondary standards at the JWPCP and Hyperion Treatment Plant before being disinfected and discharged into the ocean. None of the collected wastewater is treated or disposed of within the City's service area, however, as Table 6.5.2 shows.

The wastewater volume generated by the City for FY2014-2015 was estimated based on average daily sewer generation rates as provided in the City's *System Evaluation and Capacity Assurance Plan and Rehabilitation and Replacement Program,* December 2014. In 2015, approximately 37% of the total potable water deliveries were estimated to have been captured as wastewater and sent to LACSD and the City of Los Angeles for treatment. The estimated wastewater collected in FY 2014-2015 is provided in Table 6.5.1 on the following page.

Table 6.5.1: Wastewater Collected Within Service Area in 2015

Wastewater Collection			Recipient of Collected Wastewater		
Wastewater Collection Agency	**Wastewater Volume Metered or Estimated?**	**Volume of Wastewater Collected from UWMP Service Area 2015**	**Wastewater Treatment Agency Receiving Collected Wastewater**	**Treatment Plant Name**	**Is WWTP Located Within UWMP Area?**
City of El Segundo	Estimated	1,311	City of Los Angeles	Hyperion Treatment Plant	No
City of El Segundo	Estimated	1,669	LACSD	JWPCP	No
Total Wastewater Collected from Service Area in 2015:		2,980			

NOTES: Wastewater volume estimated based on average flows of 1.17 millions of gallons per day (mgd) to Hyperion and 1.49 mgd to LACSD, as provided in the City System Evaluation and Capacity Assurance Plan and Rehabilitation and Replacement Program, December 2014.

Table 6.5.2: Wastewater Treatment and Discharge Within Service Area in 2015

☒	No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.								
						2015 volumes			
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
					Total	0	0	0	0

NOTES: This table intentionally left blank.

Urban Water Management Planning Act Requirement:

10633 (c) (Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use

Recycled water is used at 36 sites within the City service area, with a total estimated demand of approximately 9,300 AFY. The largest of these users of recycled water is the El Segundo Chevron Refinery, which uses over 93% of the City's recycled water for irrigation, boiler feed water, cooling towers, and its nitrification plant. The remainder of the recycled water use within the City is used for irrigation of parks, medians, golf courses, etc. Recycled water users requiring more than 20 AFY are identified in Table 6.5.3. The current and projected recycled water direct beneficial uses are listed in Table 6.5.4. In addition, Figure 6.5.1 shows a map of the recycled water service to the City.

Table 6.5.3: Recycled Water — Current Use

Name	Recycled Water Demand	Water use
Aerospace Corp.	59.1	Irrigation
Chevron Refinery	8,720.4	Boiler feed water, Nitrification Plant, Irrigation
El Segundo Golf Course	58.5	Irrigation
Hughes Way	132.8	Irrigation
Los Angeles Airforce Base	32.9	Irrigation
NRG	40.2	Industrial
Plaza El Segundo	23.6	Irrigation
Recreation Park – El Segundo	30.8	Irrigation
So. Cal Edison – El Segundo Generation Station	45.2	Industrial
Washington Park	20.1	Irrigation

Note: Units are in acre-feet

Figure 6.5.1: City of El Segundo Recycled Water Distribution System

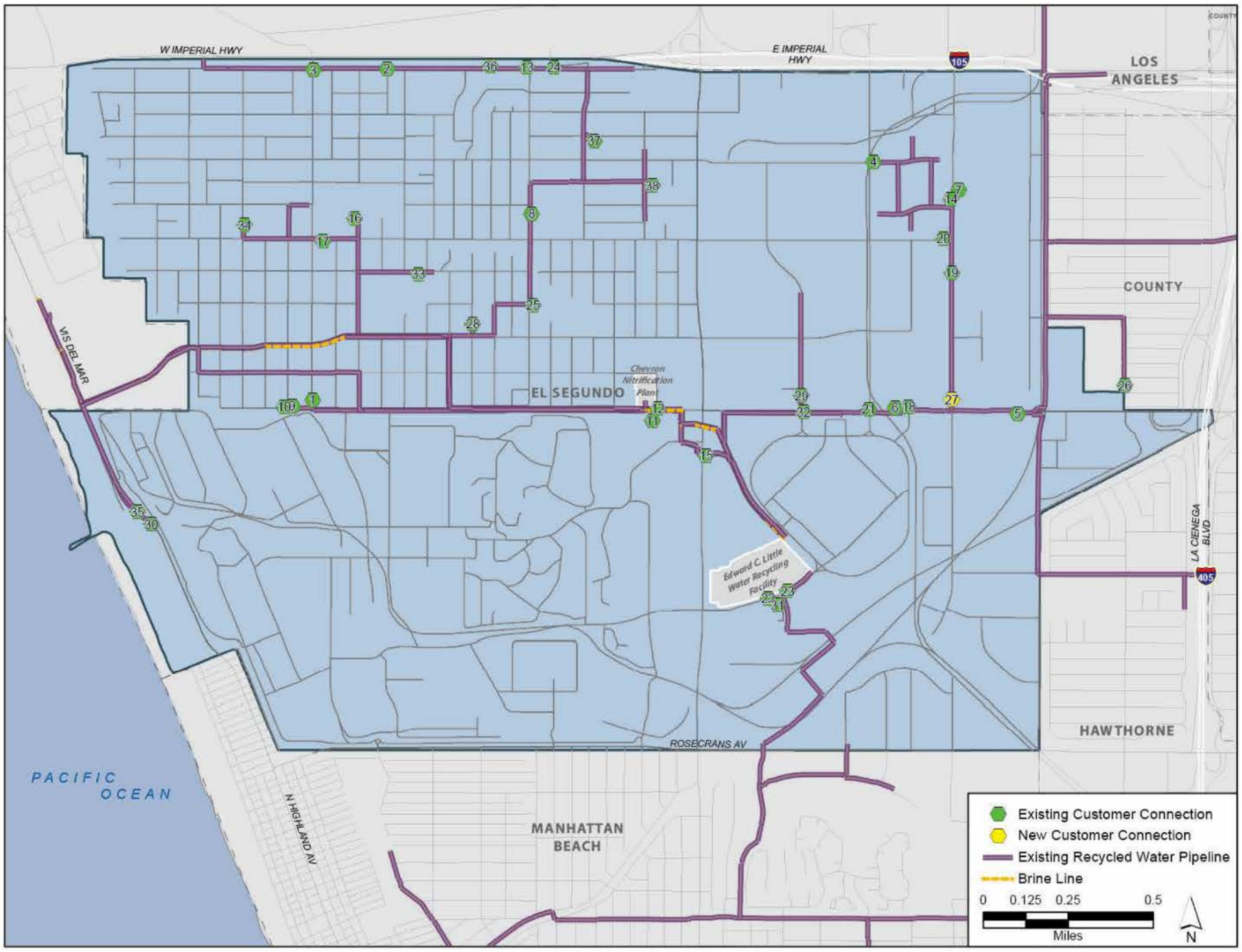


Table 6.5.4: Current and Projected Recycled Water Direct Beneficial Uses within Service Area

☒	Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.						
Name of Agency Producing (Treating) the Recycled Water:		West Basin Municipal Water District (WBMWD)					
Name of Agency Operating the Recycled Water Distribution System:		WBMWD					
Supplemental Water Added in 2015:		0					
Source of 2015 Supplemental Water:		0					
Beneficial Use Type	**General Description of 2015 Uses**	**Level of Treatment**	**2015**	**2020**	**2025**	**2030**	**2035**
Agricultural Irrigation							
Landscape Irrigation (excludes golf courses)	Medians, parks, school fields, libraries, and commercial properties irrigation	Tertiary	521	521	521	521	521
Golf Course Irrigation	El Segundo Golf Course	Tertiary	59	59	59	59	59
Commercial Use							
Industrial Use	Chevron Refinery: HP boiler feed water, LP boiler feed water, cooling towers, nitrification plant	Advanced	8,635	8,635	8,635	8,635	8,635
Geothermal and Other Energy Production	NRG, So. Cal Edison	Tertiary	85	85	85	85	85
Seawater Intrusion Barrier	-	-	-	-	-	-	-
Recreational Impoundment	-	-	-	-	-	-	-
Wetlands or Wildlife Habitat	-	-	-	-	-	-	-
Groundwater Recharge (IPR)*	-	-	-	-	-	-	-
Surface Water Augmentation (IPR)*	-	-	-	-	-	-	-
Direct Potable Reuse	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-
		Total:	**9,300**	**9,300**	**9,300**	**9,300**	**9,300**

Notes: Values were obtained from the West Basin Municipal Water District Water Use Report - Fiscal Year 2014-2015.
Notes: Indirect Potable Reuse (IPR)
Notes: Units are in acre-feet

Urban Water Management Planning Act Requirement:

10633 (d) (Describe and quantify) the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

The City does not have any plans to expand its current recycled water system. However, WBMWD released a Capital Implementation Master Plan for Recycled Water Systems in 2009 that identified potential expansions to its systems. Although this will not expand the City's recycled water system, it will help increase reliability of both recycled and potable water service in the area, and therefore is briefly discussed below.

The 2009 Master Plan identifies several improvements that can be made to expand WBMWD's recycled water system. These are summarized in WBMWD's 2015 UWMP. Apart from increasing reliability of the distribution system through repairs and corrosion protection, one major expansion is planned that will indirectly help increase reliability to the City:

- Hyperion Secondary Effluent Pump Station Expansion: With the increasing demand on ECLWRF, an increase for effluent from Hyperion is also needed. More secondary treated wastewater is necessary to produce recycled water for injection into the West Basin, as well as increased demands through other expansion projects. A pump station expansion at Hyperion would be able to provide a capacity of up to 70 MGD for ECLWRF. Although this project does not increase the supply to the City, it does increase the reliability of supply by ensuring that ECLWRF will be able to produce enough recycled water for its recycled water customers.

The City does not currently plan to expand recycled water use within its service area. This is summarized in Table 6.5.5.

Table 6.5.5: Methods to Expand Future Recycled Water Use

<table>
<tr><td>☒</td><td colspan="3">Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.</td></tr>
<tr><td>-</td><td colspan="3">Provide page location of narrative in UWMP</td></tr>
<tr><th>Name of Action</th><th>Description</th><th>Planned Implementation Year</th><th>Expected Increase in Recycled Water Use</th></tr>
<tr><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td colspan="3">Total</td><td>0</td></tr>
</table>

Notes: Table intentionally left blank

Urban Water Management Planning Act Requirement:

10633 (e) (Describe) the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

Table 6.5.6 compares the 2015 projected recycled water use from the 2010 UWMP to the actual 2015 use. Table 6.5.4 shows the current and projected recycled water uses within the City's service area. It can be seen that the actual use for 2015 surpassed the projected use; however, this is due largely to annual variation in use of recycled water at the Chevron Refinery.

Table 6.5.6: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual

☐		Recycled water was not used in 2010 nor projected for use in 2015.The supplier will not complete the table below.	
Use Type		**2010 Projection for 2015**	**2015 Actual Use**
Agricultural irrigation			
Landscape irrigation (excludes golf courses)		202	521
Golf course irrigation		23	59
Commercial use			
Industrial use		8,525	8,635
Geothermal and other energy production		0	85
Seawater intrusion barrier		-	-
Recreational impoundment		-	-
Wetlands or wildlife habitat		-	-
Groundwater recharge (IPR)		-	-
Surface water augmentation (IPR)		-	-
Direct potable reuse		-	-
Other	*Type of Use*	-	-
	Total	8,750	9,300

NOTES: 2010 Projections for 2015 were calculated based on a combination of 2010 UWMP Tables 4.5.3 and 3.2.8. The total recycled water uses from Table 3.2.8 were used in conjunction with the percentage of recycled water used per customer in Table 4.5.3 to determine the projected recycled water use per Use Type for this table.

> ***Urban Water Management Planning Act Requirement:***
>
> *10633 (f) (Describe the) actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.*

The City, WBMWD, and MWD encourage recycled water use among its customers. One of the most compelling ways to encourage the use of recycled water is through the use of financial incentives. Recycled water is available at anywhere from a 21-25% discount to customers who use it over potable water. This allows financial savings while encouraging water conservation. In addition, the WBMWD also encourages the use of recycled water by emphasizing the benefits of recycled water to its customers. Among these benefits include the increased reliability and the use of recycled water being consistent with the statewide goals for water conservation. WBMWD notes that, even during a drought, wastewater will still be produced and must be treated to recycled water standards.

WBMWD will also advance funds necessary for retrofitting existing potable connections for use with recycled water. WBMWD realizes that the capital costs associated with this retrofitting may be unavailable. To prevent this from hindering the use of recycled water at these sites, WBWMD will retrofit the existing system and allow monthly reimbursement for advanced funds.

Although these incentives are available, currently there are no planned expansions for the City's recycled water system. This is shown in Table 6.5.7.

Table 6.5.7: Methods to Encourage Recycled Water Use

Actions	Projected Results				
	2015	2020	2025	2030	2035
Financial Incentives	0	0	0	0	0
Total	0	0	0	0	0

Notes: Units are in acre-feet per year

In addition to the City and WBMWD incentives, MWD also has an extensive incentive program for encouraging the use of recycled water among its member agencies. Please refer to the MWD 2015 UWMP update for more information.

Urban Water Management Planning Act Requirement:

10633 (g) (Provide a) plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

The 2009 Capital Implementation Master Plan for Recycled Water Systems describes WBMWD's plans to expand the recycled water system. However, the City does not anticipate expansions to its own recycled water system. WBMWD is currently working on projects (e.g. the Hyperion Secondary Effluent Pump Station Expansion projects described above) to increase the use and reliability of recycled water within its service area.

Table 6.5.8: Methods to Expand Future Recycled Water Use

<table>
<tr><td>☒</td><td colspan="3">Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.</td></tr>
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<tr><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td colspan="3">Total</td><td>-</td></tr>
</table>

6.6 FUTURE WATER PROJECTS

> ***Urban Water Management Planning Act Requirement:***
>
> *10631 (h) (Describe) all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635.*

Currently, the City does not have any planned projects that will diversify or expand the water supply available to the City. The City has determined that pumping groundwater is not a viable option for diversifying its water supply. Instead, the City anticipates that all potable water will be provided through WBMWD, which has been determined to be high quality and reliable.

WBMWD is diversifying its water sources to meet its target of reducing imported water from the region through MWD by 17% within the next 20 years. This will be done through the development of ocean water desalination and expanding its recycled water system. For more information on how WBMWD plans to meet this target, refer to the WMBWD 2015 UWMP.

Table 6.6.1: Expected Future Water Supply Projects or Programs

<table>
<tr><td>☒</td><td colspan="6">No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.</td></tr>
<tr><td>☐</td><td colspan="6">Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.</td></tr>
<tr><td></td><td colspan="6">Provide page location of narrative in the UWMP</td></tr>
<tr><th rowspan="2">Name of Future Projects or Programs</th><th colspan="2">Joint Project with other agencies?</th><th rowspan="2">Description (if needed)</th><th rowspan="2">Planned Implementation Year</th><th rowspan="2">Planned for Use in Year Type</th><th rowspan="2">Expected Increase in Water Supply to Agency</th></tr>
<tr><th>Yes or No?</th><th><i>If Yes, Agency Name</i></th></tr>
<tr><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
</table>

7 WATER SUPPLY RELIABILITY

7.1 Constraints of Water Sources

Urban Water Management Planning Act Requirement:

CWC 10631(c)(2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practical

CWC 10634 The plan shall include information, to the extent practical, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

Currently, the only source of potable water that the City of El Segundo (City) utilizes is wholesale distributed water through the West Basin Municipal Water District (WBMWD) which in turn is provided through the Metropolitan Water District of Southern California (MWD) and the State Water Project (SWP). Additional water supplies are obtained by treating wastewater and using it as recycled water for irrigation purposes only. Although these sources are deemed reliable, each has unique challenges to ensure that water will continue to be available. These challenges are shown in Table 7.1.1 and described below.

Table 7.1.1: Factors Resulting in Inconsistency of Water Supply

Water Supply Sources	Legal	Environmental	Water Quality	Climatic	Additional Information
WBMWD Wholesale Water			✓		NA
WBMWD Recycled Water			✓		NA

West Basin Municipal Water District (WBMWD) Wholesale Water

WBMWD identified that its water supply to the City is considered reliable and sufficient to meet demand. However, the reliability of the supply is dependent on the water quality delivered by the SWP to MWD. In general, the SWP water quality has been acceptable, with delivered water meeting State threshold requirements. However, as seawater intrusion in the Bay-Delta increases, water quality can be diminished. In addition, as water moves through the Bay-Delta, levels of total organic carbon and bromide are likely to increase. Water quality may also be affected by the amount of wastewater that is disposed as this provides a means for the transportation of salts and pathogens into clean water supplies. To prevent these water quality issues from affecting the overall reliability of supply, WBMWD conducts water quality analyses throughout the delivery process and at its water treatment plants to ensure water is safe prior to delivery. Furthermore, State regulatory factors have included biological assessments affecting the amount of water delivered from the Bay-Delta to the SWP system to prevent degradation of water quality. MWD, WBMWD, and the City are diligent in identifying poor water quality and, in the event of an observed water quality issue, will respond immediately to ensure substandard supplies are treated properly and the clean source of potable water is restored. Please see Section 7.1.3 for more information regarding water quality.

Recycled Water

Recycled water is treated by WBMWD to the tertiary level and, as described in Chapter 6, the supply is considered reliable. Similar to the City’s potable water supply, water quality issues have the potential to impact reliability and threaten the supply of recycled water.

The process of treating and distributing wastewater and recycled water can be hazardous due to harmful bacteria and waste contaminants. As a result, the City must meet water quality standards set forth by regulating agencies. These standards are prone to change as new issues develop. In response to these changing standards, recycled water treatment plants must adapt to the regulations and modify the process as necessary to ensure that water can continually be delivered. The wastewater collection and recycled water distribution systems between the Los Angeles County Sanitation District (LACSD), WBMWD, and the City ensure all aspects of distributing safe and reliable recycled water are met and that high quality recycled water is delivered to its customers for non-potable use. The LACSD and WBMWD are also receptive to any changes that must be made in the treatment or distribution process to ensure compliance with all water quality standards and that water is safe for irrigation use.

Water Quality

Each of the City’s water sources present its own, unique water quality issues. Issues that may cause concern regarding water quality are described in the subsections below. It should be noted the MWD 2015 Annual Drinking Water Quality Report (covering the reporting period of January through December 2014) did not identify any contaminant above the Maximum Contaminant Level (MCL). The following subsections are presented, not to indicate they are the source of current water quality violations in the City's water supply, but instead are identified as potential issues of concern that should be monitored to ensure a high quality water supply.

WBMWD Wholesale Water:

The water quality issues associated with the water supply to the City are the same as quality issues experienced by WBMWD, and similar to those experienced by MWD. MWD has identified threats to the water quality received through the Colorado River and the SWP. MWD reports that increased salinity and chemicals (e.g. chromium VI, etc.) in the water it receives, in theory, could cause at most a 15% reduction in supply. However, MWD also noted if concentrations of these contaminants exceed the potable water quality threshold, tactics such as utilizing only small amounts of the affected water and blending it with potable, processed water would reduce the concentration to acceptable levels. MWD has stated that it "anticipates no significant reductions in water supply availability [from the Colorado River, State Water Project, or local groundwater sources] due to water quality."

The City realizes the importance of constantly ensuring the water it distributes meets potable water standards. Although there are no water quality issues that immediately threaten the supply to the City's customers, the City maintains knowledge of water quality issues to prevent poor quality water from being distributed. The following subsections contain descriptions of the most pertinent issues of concern.

Salinity

Increased salinity in the water received from the Colorado River has required MWD to, as mentioned above, blend SWP water with Colorado River water to reduce the overall salt concentration. While this issue has not caused water supply shortages, if salinity levels continue to increase, additional membrane treatment of Colorado River water may be required. This will slow the water purification process down and could result in a reduction of the water supply.

To prevent supply reduction, MWD has established a Salinity Management Policy, which aims to reduce total dissolved solids (TDS) to less than 500 mg/L. Generally, only the water supply delivered from the Colorado River has been found with unacceptable salinity levels. Water delivered from the SWP has historically tested beneath the maximum contaminant level for salinity.

Chromium VI (Hexavalent Chromium)

While currently there is no drinking water standard for Chromium VI, the California Office of Environmental Health Hazard Assessment (OEHHA) established a draft Public Health Goal (PHG) of 0.02 pbb (parts per billion) for Chromium VI in drinking water. However, the development of the PHG is indicative of future potential standards for drinking water. MWD records of Chromium VI content reveal that, if more stringent goals are implemented, additional treatment of SWP water may be required as levels have historically been noted to exceed the proposed PHG. The draft released by OEHHA on December, 31 2010 states that the PHG of 0.02 ppb is intended to be a “stringent health-protective goal” as opposed to a “maximum ‘safe’ level of Chromium VI in drinking water.”

In contrast to SWP, water from the Colorado River has historically been recorded as generally having undetectable levels of Chromium VI.

Perchlorate

Another potential issue of concern for MWD is the contamination of perchlorate, a component in solid rocket fuels, which has been detected in water from the Colorado River and its groundwater sources. A chemical manufacturing facility owned by Tronox, Inc. in Henderson, NV was found to be the source of the perchlorate contamination. It should be noted that Tronox is responsible for perchlorate remediation at the site. In addition, perchlorate is present in the groundwater basins in the Southern California area due to solid rocket fuels testing during the 1950’s and 1960’s. Perchlorate contamination provides challenges due to the difficulty in removing it from water. As a result additional treatment will always be required specifically for perchlorate.

Due to cleanup activities, MWD has reported a 90% reduction in perchlorate loading of Colorado River water. Perchlorate concentrations are now recorded at less than 2 µg/L since 2006 which is below the California Department of Public Health (CDPH) threshold of 6 µg/L. Furthermore, Perchlorate has not been observed above contamination levels in the City.

In January 2011, the OEHHA released a draft PHG of 1 ppb, reduced from 6 pbb, for perchlorate in drinking water, further emphasizing the importance treating the water contaminated with perchlorates.

Table 7.1.2 indicates the potential impacts of water quality on the City’s water supply, as identified by WBMWD.

Recycled Water

In addition to affecting the potable water supply, similar water quality issues also affect the recycled water supply. High levels of contaminants (e.g. TDS) in wastewater may require additional treatment to ensure that safe and reliable recycled water is delivered to City end users. Since recycled water is used primarily for industrial and irrigational purposes within the service area of both the City and WBMWD, the effects of poor quality recycled water would most likely be observed in industrial equipment and crop and plant yields. High contamination levels in industrial water could result in scaling and inefficiencies in the processes for which it is applied. In addition, high levels of contamination in recycled water for irrigation can be harmful to plant life and could prevent growth. If this were to occur, additional and more expensive wastewater treatment may be necessary.

The LACSD and WBMWD do not anticipate any issues with recycled water quality. WBMWD constantly monitors the water quality of recycled water sold to end users from its Edward C. Little Water Recycling Facility to ensure that it meets all standards. Furthermore, the stringent salinity requirements, and other water quality standards for potable water further reduces the likelihood that poor quality recycled water will be delivered. The City does not anticipate having any issues with recycled water quality that would be harmful, or in any way cause an increase in potable water use

Table 7.1.2 indicates the potential impacts of water quality on the City's water supply, as identified by WBMWD and the City.

Table 7.1.2: Water Quality - Current and Projected Water Supply Impacts

Water Source	Description of Condition	2020	2025	2030	2035
WBMWD Potable Water	No water quality issues expected	0	0	0	0
Recycled Water	No water quality issues expected	0	0	0	0

7.2 Reliability by Type of Year

Urban Water Management Planning Act Requirement:

CWC 10631(c)(1) Describe the reliability of the water supply and vunlerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

(A) An average water year,

(B) A single dry water year,

(C) Multiple dry water years.

As mentioned above, all potable water supplies are provided through WBMWD which is supplied through MWD and the SWP. Since the supply is not directly obtained by the City, the determination of reliability will largely be determined by WBMWD and MWD analyses to provide a consistent water supply to the City during normal, single dry, and multiple dry years. Although the City does not obtain its water directly from a natural source (e.g. groundwater or surface water), it is committed to reducing water demand during times of drought in order to conserve water and improve reliability for future water supplies.

For the purpose of this Plan, the Department of Water Resources defines average, single-dry, and multiple dry years as follows.

Average Year: A year, or an averaged range of years, that most closely represents the median water supply available to the agency.

Single-Dry Year: The year that represents the lowest water supply available to the agency.

Multiple Dry Years: The period that represents the lowest average water supply availability to the agency for a consecutive multiple year period (three years or more).

Table 7.2.1 identifies the normal, single dry, and multiple dry water years chosen to represent the water supply from WBMWD as well as the percentage/volume of supply that was available for public use. These percentage values do not represent additional supplies through surplus storage. Instead, they demonstrate the water available to be added to the supply system based on the hydrology of those years.

Table 7.2.1: Bases of Water Year Data

Year Type	Base Year	Available supplies if year type repeats	
		Volume Available	% of Avg Supply
Average Year	1999	9,929	100%
Single-Dry Year	2001	10,326	104%
Multiple-Dry Years 1st Year	2001	10,624	107%
Multiple-Dry Years 2nd Year	2002	10,922	110%
Multiple-Dry Years 3rd Year	2003	11,220	113%

Notes: Untis are in acre-feet per year (AFY)

In the single dry water year, demand increased due to increased temperatures, evapotranspiration rates, and a longer growing season. In response, more water was supplied by WBMWD to meet the demand. Throughout multiple dry years, the supply available from the WBMWD and MWD increases due to larger demands. It was estimated in the MWD 2015 UWMP that surplus supplies are available to meet the increased demands during normal, dry, and multiple dry year scenarios through 2035. Since this results in using more water than is naturally replenished during these years the City, WBMWD, and MWD will enact the measures outlined in their respective Water Shortage Contingency Plans to ensure that water is used as efficiently and sparingly as possible. This will help preserve the water supplies available, and ensure continued reliability for the future.

7.3 Supply and Demand Assessment

Urban Water Management Planning Act Requirement:

CWC 10635 Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five year increments, for a normal water year, a single dry year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

Tables 7.3.1 through 7.3.3, on the following pages, compare the total supply and demand as identified in Chapters 5 and 6 for normal, single dry, and multiple dry years. It can be seen that the supply available to the City, as provided in the WBMWD and MWD 2015 UWMPs, meets the total demand for the single dry year scenario. During multiple dry year scenarios, the demand exceeds the supply, however, WBMWD will be able to supply this difference. The City is committed to water conservation in single dry and multiple dry years to help preserve water reserves and supplies.

The data provided for the normal, single dry, and multiple dry year scenarios is provided in the WBMWD 2015 UWMP. The plan identifies that during a single dry year scenario, demand may increase by approximately 4% over a normal year. WBMWD identified supply was sufficient in a single dry year to meet this increased demand. During a multiple dry year, it was identified that the demand may increase by up to 5% in the third year. However, these demand increases may not actually be seen during multiple dry year scenarios due to conservation measures that will be enacted. This potentially will leave the demand consistent with a normal water year. Conservation measures may offset the predicted increase in demand over a multiple dry year period. WBMWD did not identify any reliability issues with delivering water during a single or multiple dry year period, and identified that supply would be sufficient to meet demand during a single dry year, while WBMWD will supply the remaining amount necessary during the multiple dry year scenario.

Table 7.3.1: Supply and Demand Comparison — Normal Year

	2020	2025	2030	2035
Supply Totals	17,335	17,493	17,654	17,818
Demand Totals	17,299	17,457	17,618	17,782
Difference	36	36	36	36

Notes: Units are in acre-feet per year

During a normal year, it can be seen that the City will obtain sufficient supplies from WBMWD.

Table 7.3.2: Supply and Demand Comparison — Single Dry Year

	2020	2025	2030	2035
Supply Totals	18,028	18,193	18,360	18,531
Demand Totals	17,991	18,155	18,323	18,493
Difference	37	37	37	37

Notes: Units are in acre-feet per year

The demand in a single dry year was estimated to increase by approximately 4%. During a single dry year, the worst-case scenario of experiencing another severe drought would leave the City adequate supplies, as WBMWD anticipates a 4% surplus during single dry years.

Table 7.3.3: Supply and Demand Comparison — Multiple Dry-Year Events

		2015	2020	2025	2030
Multiple-dry year first year supply	**Supply Totals**	18,548	18,718	18,890	19,065
	Demand Totals	17,991	18,155	18,323	18,493
	Difference	557	562	567	572
Multiple-dry year second year supply	**Supply Totals**	19,069	19,242	19,419	19,600
	Demand Totals	18,711	18,881	19,056	19,233
	Difference	358	361	363	367
Multiple-dry year third year supply	**Supply Totals**	19,589	19,767	19,949	20,134
	Demand Totals	19,646	19,826	20,008	20,195
	Difference	-58	-58	-59	-60

Notes: Units are in acre-feet per year

During a multiple dry year scenario with hydrology similar to that of 2001-2003, it is anticipated that, based on the supplies outlined in Chapter 6 and the surplus identified in the WBMWD 2015 UWMP, the City would be able to meet the demand.

7.4 Regional Supply Reliability

Urban Water Management Planning Act Requirement:

CWC 10620(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

Since all of the City's water supply (both potable and recycled) is provided by WBMWD, which in turn is provided through MWD and the SWP, the reliability analysis for this water source will be heavily dependent on the reliability analyses of these agencies. Although the City is dependent on these sources to provide a reliable water supply, the City also works with WBMWD to ensure water reliability in the future. The City has determined that using groundwater as a water source is not ideal due to quality issues and the adjudication agreement that allows only minimal pumping rights. Therefore, the City will continue to work with WBMWD to implement any necessary improvements to ensure a reliable, high quality water source.

8 WATER SHORTAGE CONTIGENCY PLANNING

8.1 Stages of Action

> ***Urban Water Management Planning Act Requirement:***
>
> *CWC 10632(a)(1) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, inlcuding up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.*

The City of El Segundo (City) developed a four-stage rationing plan to be implemented when the City experiences a shortage in the water supply. According to the plan, the City Manager, or a designated representative, is given the authority to declare a stage of action and implement reduction measures. Table 8.1.1 below provides an outline of each phase and the associated percentage of water supply reduction.

Table 8.1.1: Stages of Water Shortage Contingency Planning

Stage	Percent Supply Reduction	Water Supply Condition
Mandatory Water Conservation	0%	Applies at all times to prevent water waste and unnecessary water use
Stage 1: Water Watch	0%-15%	Applies during periods when the possibility exists that the City will not be able to meet all customer water demands
Stage 2: Water Alert	15%-25%	Applies during periods when the probability exists that the City will not be able to meet all customer water demands
Stage 3: Water Warning	25%-35%	Applies during periods when the City will not be able to meet all customer water demands
Stage 4: Water Emergency	35%-50%	Applies when a major failure of any supply or distribution facility, whether temporary or permanent, occurs in the water distribution system of the State Water Project (SWP), Metropolitan Water District of Southern California (MWD),or West Basin Municipal Water District, or City facilities (WBMWD)

8.2 Prohibitions on End Uses

> ***Urban Water Management Planning Act Requirement:***
>
> *CWC 10632(a)(4) Additional, mandatory prohibitions against specific use practices during water shortages, inlcuding but not limited to, prohibiting the use of potable water for street cleaning.*
>
> *CWC 10632(5) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumtion reduction methods in its water shortage contigency anaylsys that would reduce water use, are appropraite for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply*

To prevent water waste and excessive consumption, the City has set in place Water Conservation Ordinance: Ordinance No. 1433. The Water Conservation Ordinance outlines mandatory restrictions on water use within the City, as described below in table 8.2.1. A copy of the Ordinance can be found in Appendix G.

The City has also adopted a Water Shortage Contingency Plan (WSCP) as part of its Municipal Code. The WSCP describes the measures to take in the event of a water shortage, including different stages of action corresponding to different levels of drought. As mentioned above, the WSCP has four stages of actions to take and several policies to implement to minimize the impacts of water shortage, prepare for an increase in shortage, and attempt to conserve water to prevent further shortage. The Water Shortage Contingency Plan can be found in Appendix H.

Table 8.2.1 on the following page provides an overview of the mandatory prohibitions and the consumption reduction methods the City will implement to compensate in the event of a water shortage.

Table 8.2.1: Restriction and Prohibitions on End Uses

Stage	Restrictions and Prohibitions of End Users	Penalty, Charge, or Other Enforcement
All	Mandatory Water Conservation	Yes
1	Voluntary use reduction	Yes
2	Operating Ornamental Fountains	Yes
	Watering Lawns and Landscapes	Yes
	Using Water for Agriculture and Nurseries	Yes
3	Issuing New Meters	Yes
	Washing Vehicles	Yes
4	Filling Artificial Water Sources	Yes
	Using Air Conditioning	Yes

Mandatory Water Conservation

Regardless of water shortage conditions, the following water conservation measures are in effect at all time in the City:

Repair of Plumbing, Sprinkler, and Irrigation System:

As soon as practicable, but not later than forty-eight (48) hours after discovery of a water leak, end users must repair any leaking pipes, faucets, plumbing fixtures, other water service appliances, sprinklers, watering\ irrigation systems, or distribution systems promptly unless a waiver is obtained from the City.

Watering/Irrigation:

Except as otherwise provided in Section 10-5-5 of the Mandatory Water Conservation Ordinance (see Appendix G), it is unlawful for any person to water, or permit the watering of, their lawn or landscaping between the hours of nine (9.00) AM and five (5:00) PM. Additionally, it is unlawful for any person to water, or permit the watering of, their lawn or landscaping for a period longer than fifteen (15) minutes per station each day.

Miscellaneous Restrictions:

The following are unlawful for any person:

- Allowing grass, lawns, groundcover, shrubbery, and open ground to be watered at any time while it is raining.

- Operating landscape irrigation system(s) that allow overspray or excess runoff onto impervious surfaces (such as sidewalks, driveways, v-ditches, gutters, and roadways).
- To use a water hose to wash any vehicle including, without limitation, cars, trucks, boats, trailers, recreational vehicles, or campers, or any other aircraft, tractor, or any other vehicle, or portion thereof, unless the hose is equipped with an automatic shutoff nozzle. Except for individual residential vehicle washing, all water from vehicle washing/cleaning activities must be prevented from discharging to the stormwater drainage system.

Commercial Car Washes:

It is unlawful for commercial car wash facilities to permit the washing of any boat or vehicle in its facility or on its premises, other than by the following methods:

- Use of a mechanical automatic car wash facility that utilizes water recycling equipment or recycled water;
- Use of a hose that operates on a timer for limited time periods and shuts off automatically;
- Use of a hose equipped with an automatic shutoff nozzle; or
- Use of a bucket for hand washing

In addition, all wash/rinse water must be captured and recycled or discharged into the sanitary sewer system. All new commercial conveyor car wash facilities must be equipped with a water recycling system.

Washing of Equipment and Machinery:

It is unlawful for any person to use a water hose to wash any type of equipment or machinery, or any portion thereof, unless the hose is equipped with an automatic shutoff nozzle. All water from such washing/cleaning activities must be prevented from discharging into the stormwater drainage system.

Cleaning of Structures:

It is unlawful for any person to use water through a hose to clean the exterior of any building or structure unless such hose is equipped with a shutoff nozzle. All water from such activities must be prevented from discharging into the stormwater drainage system.

Cleaning of Surfaces:

It is unlawful for any person to use water through a hose to clean any sidewalk, driveway, roadway, parking lot, or any other outdoor paved or hard surfaced area unless all water from the activity is prevented from discharging into the stormwater drainage system.

Water Spillage:

Every person must minimize water spillage into streets, curbs, or gutters, and minimize runoff beyond the immediate area of use. Every person is expected to have their water distribution lines and facilities under control at all times and are required to know the manner and extent of their water use and excess runoff.

Swimming Pools and Spas:

It is unlawful for any person to empty and refill a swimming pool or spa except to prevent or repair structural damage or to comply with public health regulations. Discharge of pool water, other than directly to the sanitary sewer system, must be consistent with this Code with regard to stormwater. Discharge of pool filter backwash to the stormwater drainage system is prohibited. All pools and spas must be equipped with a water recirculation device. The use of a pool/spa cover is encouraged to prevent evaporative water loss.

Fountains, Decorative Basins, Ponds, and Waterways:

It is unlawful for any person to use water to operate or maintain levels in decorative fountains, basins, ponds, and waterways unless a recirculation device is in use. Discharging water, other than directly to the sanitary sewer system, must be consistent with stormwater codes. Discharge of filter backwash water to the stormwater drainage system is prohibited.

Cooling Systems:

No single pass cooling systems are permitted in new connections.

Commercial Laundry Facilities:

New commercial laundry facilities must be equipped with a water reclamation system for rinse water.

Visitor-Serving Facilities:

Owners of visitor-serving facilities such as hotels, motels, and restaurants must display, in places visible to all customers, City-approved placards or decals promoting public water conservation awareness and/or advising the public that water wasting is prohibited.

Restaurants:

Restaurants in the City cannot serve water to restaurant customers, except upon customer request.

Construction:

It is unlawful to use potable water for compacting or dust control purposes in construction activities where there is a reasonably available source of recycled or other non-potable water approved by the California State Department of Health Services for such uses. Additionally, all water hoses used in connection with any construction activities must be equipped with an automatic shutoff nozzle when one may be obtained for the size or type of hose in use.

Use of Hydrants:

It is unlawful for any person to utilize any fire hydrant for any purpose other than fire suppression or emergency aid without first obtaining written approval from the City Manager or designee.

Indiscriminate Use:

It is unlawful for any person to cause or permit the indiscriminant running of water not otherwise prohibited by the Mandatory Water Conservation Ordinance which is wasteful and without reasonable purpose.

Stage 1 Water Supply Shortage (0-15% voluntary reduction)

When the City declares a Stage I water supply shortage, it is because it anticipates that, due to drought or other events, the City's water supply is uncertain. A Stage 1 Shortage calls for citizens to voluntarily reduce water consumption by 15%.

Stage 2 Water Supply Shortage (15-25% reduction)

The following water conservation mechanisms become mandatory when the City declares a Stage 2 Water Supply Shortage:

- Water shall not be used to wash down sidewalks, driveways, parking areas, tennis courts, patios, or other paved areas, except to alleviate immediate fire or sanitation hazards.
- No person shall use water to clean, fill, or maintain levels in decorative fountains, ponds, lakes, or other similar aesthetic structures unless such water is part of a recycling system or from a storm drain system.
- No person shall water any lawn, landscape, or other turf area between the following hours: 7:00 AM – 6:00 PM during PDT and 7:00 AM to 3:00 PM during PST. This restriction does not apply to commercial nurseries, golf courses, and other water-dependent industries.
- No operator or owner of a commercial nursery, golf course, or other water-dependent industry shall water any lawn, landscaping, or other turf area between the hours of 6:00 AM and 6:00 PM. There shall be no restriction on watering with reclaimed water. This

restriction does not apply to the watering of plant materials classified to be rare, exceptionally valuable, or essential to the wellbeing of rare animals.

Stage 3 Water Supply Shortage (25-35% reduction)

In addition to the conservation requirements of a Stage 2 Water Supply Shortage, the following water conservation mechanisms become mandatory when the City declares a Stage 3 Water Supply Shortage:

- New construction meters or permits for unmetered service will not be issued. Construction water shall not be used for earth work or road construction purposes.
- No person shall wash any motor vehicle, trailer, boat, or other type of mobile equipment, except with a hand-held bucket or a hose equipped with a positive shutoff nozzle for quick rinses. Commercial car wash facilities are exempt from this requirement and washing is permitted at any time on the immediate premises at this stage. The use of water by all types of commercial car washes not using partially reclaimed or recycled water shall be reduced in volume by 20%. However, washing where health, safety, and welfare of the public is contingent upon frequent vehicle cleaning, such as garbage trucks and vehicles used to transport food and perishables, is exempt from these regulations.
- No person shall water any residential lawn, landscaping, and other turf areas at any time except by hand-carried bucket. This restriction does not apply to commercial nurseries, golf courses, and other water-dependent industries.
- Irrigation of commercial nurseries, golf courses, or other water-dependent industries shall be restricted to no more than twice during a seven day period. The irrigation shall be prohibited during the hours of 6:00 AM to 6:00 PM. There shall be no restriction on watering with reclaimed water. Furthermore, this restriction does not apply to the watering of plant materials classified as rare, exceptionally valuable, or essential to the wellbeing of rare animals.

Stage 4 Water Supply Shortage (35-50% reduction)

In addition to the conservation requirements of a Stage 3 Water Supply Shortage, the following water conservation mechanisms become mandatory when the City declares a Stage 4 Water Supply Shortage:

- No person shall wash any motor vehicle, trailer, boat, or other type of mobile equipment, except with a hand-held bucket or a hose equipped with a positive shutoff nozzle for quick rinses. As an exception, washing is permitted at any time on the immediate premises of a commercial car wash. Water used by all types of commercial car washing facilities, not using partially reclaimed or recycled water, shall be reduced in volume by 50%. However, washing where health, safety, and welfare of the public is contingent upon frequent vehicle cleaning, such as garbage trucks and vehicles used to transport food and perishables, is exempt from these regulations.

- Residential landscaping shall be restricted to watering only permanent trees and shrubs with a hand carried bucket or drip irrigation system once during a seven day period during the months of June, July, August, and September, and prohibited during the hours of 7:00 AM to 6:00 PM. Residential landscape irrigation shall be restricted to watering only permanent trees and shrubs with a hand carried bucket or drip irrigation system once during a fourteen day period during the months of October, November, December, January, February, March, April, and May, and prohibited during the hours of 7:00 AM to 3:00 PM. This restriction does not apply to commercial nurseries, golf courses, and other water-dependent industries.
- Irrigation of commercial nurseries, golf courses, or other water-dependent industries shall be restricted to once during a seven day period and prohibited during the hours of 6:00 AM to 6:00 PM. There shall be no restriction on watering with reclaimed water. This restriction does not apply to the watering of plant materials classified as rare, exceptionally valuable, or essential to the wellbeing of rare animals.
- Filling or refilling swimming pools, spas, ponds, and artificial lakes is prohibited.
- No water shall be used for air conditioning purposes.

Water Shortage Allocation

During advanced stages of water shortage, the City of places mandatory allocation constraints requiring a percent consumption reduction. Individual allotments are based on a "basic use" as administratively determined by the City Manager. Exceptions are made for residential customers with 5/8”, 3/4", or 1” meters which are not required to use less than a set daily equivalent per two month billing period. Reductions for each stage are outlined below:

Stage 2:

20% reduction from the set allocation **OR** no more than the daily equivalent of 24 hundred cubic feet (hcf) per two month billing period, Stage 3:

30% reduction from the set allocation **OR** no more than the daily equivalent of 21 hcf per two month billing period,

Stage 4:

50% reduction from the set allocation **OR** no more than the daily equivalent of 15 hcf per two month billing period.

Wholesale Water Shortage Contingency Plans

Since the City of El Segundo receives its imported water supplies from the WBMWD and MWD, the City is also subject to the WSCPs of these Districts. Each District has water rationing stages and a WSCP that specifies the actions to be taken during a water shortage of 50% or greater. In the event that a water shortage becomes severe and a 50% reduction is necessary, the City will comply with the conservation measures as provided by the WBMWD and MWD WSCPs. More information on the WBMWD and MWD WSCPs can be found in the respective 2015 Urban Water Management Plans of each District

Urban Water Management Planning Act Requirement:

CWC 10632(b) Commencing with the urban water damange plan update due July, 1, 2016, for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the urban water supplier shall analyze and define water features that are artificially supplied with water, inlcuding ponds, lakes, waterfalls, and foundtain, separately from swimming pools and spas, as definded in subdivision (a) Section 115921 of the Health and Safety Code.

Health and Safety Code Section 115921:

As used in this article the following terms have the folloing meanings:

(a) “Swimming pool” or “pool” means and structure intended for swimming or recreational bathing that contains water over 18 inches deep. “Swimming pool” included in-ground and aboveground structure and includes, but is not limited to, hot tubes, spas, portable spas, and non-portable wading pools.

The City places escalating restrictions on water features that are artificially supplied with water for each progressive stage of water shortage. Including prohibitions on the refiling and draining, specific requirements outlined by the City for pools and spas can be found under the description for each of the four stages of water shortage listed above.

8.3 Penalties, Charges, Other Enforcement of Prohibitions

Urban Water Management Planning Act Requirement:

CWC 10632(a)(6) Penalties or charges for excessive use, where applicable.

In the case of a water supply shortage, violators of the Mandatory Water Conservation Ordinance and WSCP can face a maximum fine of $70 for a single violation. Table 8.3.1 describes the penalties associated with single and recurring violations, which are outlined in the ordinance.

Table 8.3.1: Penalties & Charges

Violation	Phase When Penalty Takes Effect	Penalty or Charge
First Failure to Comply	Stage 2, 3, & 4	Written Warning
Second Failure to Comply	Stage 2, 3, & 4	$35 and installation of a flow restricting device
Third Failure to Comply	Stage 2, 3, & 4	$70 and discontinued water service

8.4 Consumption Reduction Methods

Urban Water Management Planning Act Requirement:

CWC 10632(a)(5) Consumption reduction in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropirate ofr its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

In addition to imposing water restrictions on end users, the City has taken its own steps to improve water savings within the service area. In order to promote citywide adherence to restrictive mandates, the City understands that it must lead by example. Therefore, all City facilities adopt the same restrictions as residential and private sector facilities. As California is currently in state of drought, these restrictions are already being observed by the City in order to aid in water savings. Furthermore, the City has expanded its public outreach campaign by broadcasting water saving tips through television and local media, developing pamphlets and flyers to be displayed in local areas as well as private; visitor-serving facilities, and providing State rebate information on the City website. Also, information regarding drought conditions and water saving progress can be found on the City's Facebook account.

The Chevron El Segundo Refinery utilizes the nearly all of the City's reclaimed water. As a result, the City must comply with an Alternative Compliance Order by the State Water Resources Control Board. As part of the effort to comply with the order, the City retained Waterwise Consulting, Inc. to offer and perform water efficiency audits for 25 of the top commercial, institutional, and industrial (CII) potable water user, excluding Chevron. As of December 2015, 4 CII audits had been conducted and the resulting reports have been submitted for City review. As of March 2016, the period for efficiency audits was set for October 2016. As the City continues to encourage private industry to make water-saving upgrades, the City understands user interest is the key to success of the program.

8.5 Determining Water Shortage Reductions

Urban Water Management Planning Act Requirement:

CWC 10632(a)(9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

Consistent with California Governor's Executive Order B-29-25, the City is currently monitoring and comparing monthly consumption and production rates to the same months in 2013 in order to determine levels of water usage reduction. These rates rely on water purchase transaction records as well as end user meter readings to determine water quantities. Should water shortage conditions remain, the City will continue to use these methods to document and analyze measureable progress in water savings against previous years.

8.6 Revenue and Expenditure Impacts

Urban Water Management Planning Act Requirement:

CWC 10632(a)(7) An analysis of the impacts of each of the action and conditions described in paragraphs (1) to (6), inclusive, on the revenues and expenditures of the urban water supplier, and proposal measures to overcome those impacts, such as the development of reserves and rate adjustments.

During a water shortage, revenue is expected to decrease due to a reduction in water sales. Furthermore, expenditures would be expected to increase due to the necessary marketing of water conservation methods to reduce water use and potential increases in water purchased from WBMWD. In the event that expenditures significantly outweigh revenue, the City has the authority to increase water use rates or impose a water fee surcharge during times of drought. The results of this would be two-fold: bringing in additional revenue with similar sales while simultaneously discouraging water waste. The City also has a tiered rate structure for both potable and recycled water use. Using this system, consumers rates increase with increased water consumption. These options allow the City to respond quickly to funding issues accompanied with a drought situation.

8.7 Resolution or Ordinance

Urban Water Management Planning Act Requirement:

CWC 10632(a)(8) A draft water shortage contingency resolution or ordinance.

Ordinance No. 1433, the Mandatory Water Conservation Ordinance and the WSCP which describe the actions to be taken to conserve water both during times of normal supply and during droughts, can be found in Appendix G and H, respectively.

8.8 Catastrophic Supply Interruption

Urban Water Management Planning Act Requirement:

CWC 10632(a)(3) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies inlcuding, but not limited to, a regional power outage, an earthquake, or other disaster.

Potential causes for catastrophic failures that could put the water supply at risk include fires and earthquakes. Both of these scenarios could potentially damage the infrastructure of the water distribution system. In the event of a catastrophic event that prevents the City from obtaining water for distribution, WBMWD implements actions and methods to continue supplying water to customers of its member agencies. Water reserves are available to MWD through Diamond Lake, as well as other surface reservoirs and it is estimated that MWD could provide full supply for up to six months for all of its service areas following a catastrophic event. In addition, methods to ensure that water is continually supplied to customers include stockpiling emergency pipeline repair materials and coordinating with the California Governor’s Office of Emergency Services (Cal OES) and County’s Operations Area in the event of a disruption in water supply.

Any effect felt by the WBMWD during a catastrophic event would impact the water supply to the City as well. As a result, the City is subject to the actions and rationing of WBMWD. During any kind of catastrophic event that disrupts the water supply, including a regional power outage or an earthquake, the City, in conjunction with WBMWD and MWD, are prepared to continue providing a reliable source of water.

Regional Power Outage

The City has identified the possibility of a regional power outage and its effect on the water supply. Currently, the City Water Division does not have back-up generators. If a regional power outage were to occur, then the two electric pumps would become disabled. However, the City has a natural gas pump, which has a greater pumping capacity than both electric pumps combined. The electric pumps operate at a maximum rate of 2000 gallons per minute (GPM), while the natural gas pump operates at 5000 GPM. If a major earthquake or other catastrophic incident caused a regional power outage and a natural gas line break, but the water distribution lines were still intact, the City would be able to provide water to its customers and its emergency interties (i.e. City of Los Angeles Department of Water & Power, City of Manhattan Beach, and the California Water Service Company). Water Division operations personnel can change valve positions and directly operate the water system from MWD’s water pressure. The City is adequately prepared in the event of a regional power outage.

In addition, to ensure the imported water supply is made available MWD has backup generation at its facilities as well as the ability to employ gravitational flow from regional reservoirs such as Lake Mathews, Castaic Lake, and Silverwood Lake. Mobile generators are also available as needed.

Earthquake

In the event of a catastrophic earthquake, the City can coordinate with MWD and WBMWD to ensure that any damaged lines are repaired as necessary to continue distributing water. In this event, MWD would activate its Emergency Operation Center (EOC) to quickly respond to emergencies and provide emergency services to its customers. The goal of the EOC is to identify leaks and other weaknesses in the system following a catastrophic earthquake, and to quickly isolate the problem in order to reduce wasted water and provide a potable water supply to the population. In a worst-case scenario that caused the City’s water reservoirs to rupture, water service could continue by aligning the supply system so that it is supplied by MWD pressure.

With population growth, energy shortages, earthquakes, and the threat of terrorism experienced by California; maintaining the gentle balance between water supply and demand is a complicated task that requires planning and forethought. In the event that a water shortage occurs, simple measures can be implemented to conserve the water supply at a public level. The stages in which various conservation measures will be imposed by the City are laid out in Table 8.1.1 above

8.9 Minimum Supply Next Three years

Urban Water Management Planning Act Requirement:

CWC 10632(a)(2) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply

Table 8.9.1 shows the minimum water supply available during the next three years with a multiple year hydrology as defined by the 2001-2003 water years. It can be seen that water supplies for the next three years with multiple dry year hydrology are expected to be able to meet 100% of the demand for the City as identified by its water supplier; WBMWD.

Table 8.9.1: Minimum Supply Next Three Years

Water supply sources	Average / Normal Water Year Supply	Multiple Dry Water Year (2001) Year 2016	Multiple Dry Water Year (2002) Year 2017	Multiple Dry Water Year (2003) Year 2018
WBMWD Water	17,463	18,685	19,209	19,733
Percent of normal year:	100%	107%	110%	113%

Note: Units are in acre-feet per year

Although the supplies are great enough to be met for the next three years in the event of a drought, continuing to consume such quantities from the water supply may outweigh the water replenished through natural processes in the distribution chain. This could potentially result negative consequences, including overdraft conditions of the groundwater basins. In the event of a single dry or multiple dry year scenarios, the City would reduce demand by implementing the water conservation measures described above in the WSCP Section. This, in conjunction with the demand management measures in place, emphasizes the importance of water conservation to the City o and its water customers.

Table 8.9.1 does not identify the source of recycled water as varying water source. It is assumed that recycled water supply will remain constant, as wastewater will still be available during drought years to be treated to recycled water standards and distributed through the LACSD and WBMWD service area. Recycled water is additionally accounted for in tables 7.3.1 through 7.3.3 in the previous chapter to compare the supply and demand during normal, single dry, and multiple dry year scenarios. The data regarding total demand and supply, including recycled water, is documented in Chapters 4 and 6, respectively.

9 DEMAND MANAGEMENT MEASURES

9.1 INTRODUCTION

Urban Water Management Planning Act Requirement:

CWC 10631 (f)(A)…The narrative shall describe the water demand management measure that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.

(B) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures: (i) Water waste prevention ordinances. (ii) Metering. (iii) Conservation pricing. (iv) Public education and outreach. (v) Programs to assess and manage distribution system real loss. (vi) Water Conservation program coordination and staffing support. (vii) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.

The City of El Segundo (City) works with the West Basin Municipal Water District (WBMWD) to implement water conservation techniques to reduce the total demand of water throughout the City and WBMWD. Together, the City and WBMWD implement the seven required Demand Management Measures (DMMs). WBMWD is a signatory on the California Urban Water Conservation Council (CUWCC) Memorandum of Understanding (MOU) regarding Urban Water Conservation in California. CUWCC represents a diverse group of water supply agencies dedicated to establishing guidelines toward implementing conservation measures and managing supply demands. The following table summarizes the BMPs/DMMs.

Table 9.1.1: CUWCC BMP Organization and Names and UWMP DMMs

Category	BMP #	BMP Name	DMM #	DMM Name
BMP 1: Utility Operations	1.1	Operations Practices	5	Programs to Assess and Manage Distribution System Real Loss
	1.2	Water Loss Control	1	Water Waste Prevention Ordinances
	1.3	Metering with Commodity Rates	2	Metering
	1.4	Retail Conservation Pricing	3	Conservation Pricing
BMP 2: Public Education and School Education	2	Public Education and School Education	4	Public Education and Outreach
			6	Water Conservation Program Coordination and Staffing Support
BMP 3: Residential Programs	3	Residential Programs	3	Conservation Pricing
			4	Public Education and Outreach
			6	Water Conservation Program Coordination and Staffing Support
BMP 4: Commercial, Industrial, and Institutional	4	Commercial, Industrial, and Institutional	3	Conservation Pricing
			4	Public Education and Outreach
			6	Water Conservation Program Coordination and Staffing Support
BMP 5: Landscape	5	Landscape	3	Conservation Pricing
			6	Water Conservation Program Coordination and Staffing Support

9.2 WATER WASTE PREVENTION ORDINANCES

The City adopted water conservation measures by Ordinance Numbers 1433 and 1437. Ordinance No. 1433 added enforcement actions to the formerly adopted ordinance, and was adopted on November 3, 2009. Ordinance No. 1437 addresses water conservation in landscaping, and was adopted on December 15, 2009. To enforce these two ordinances, the City will issue warnings and subsequent citations to customers exceeding the conservation constraints.

In addition, a new Ordinance is under review to restrict the amout of water and sewer rates pursuant to Health and Safety Code §5471 and the City's Municipal Code §11-1-5. A copy of each of the Ordinances is located in Appendix G for reference.

9.3 METERING

Urban Water Management Planning Act Requirement:

CWC 526 (a)…Notwithstanding any other provisions of law, an urban water supplier that, on or after January 1, 2004, received water from the Federal Central Valley Project under a water service contract or subcontract…shall do both of the following: (1) On or before January 1, 2013, install water meters on all service connections to residential and nonagricultural commercial buildings…located within its service area.

CWC 527 (a)…An urban water supplier that is not subject to Section 526 shall do both the following: (1) Install water meters on all municipal and industrial service connections located within its service area on or before January 1, 2025.

Metering with commodity rates by wholesale and retail agencies has been an industry standard; it involves setting water rates based upon the external costs of importing water or producing water from local sources, the internal costs of distribution and service, and establishing the sources for financing or funding these costs. The City has meters in place for all of its customers, including separate meters for single-family residential, multi-family residential, commercial, industrial, and large landscape customer sectors. Water usage is billed based on volume of water consumed; in addition, a fixed monthly or bi-monthly service fee based on meter size is billed separately. Hence, the City utilizes commodity rates and has meters for all accounts since 1970.

9.4 CONSERVATION PRICING

The City currently has a tiered rate structure in place to encourage water conservation. Additionally, the City has a service charge that is calculated by meter size and usage for all customer sectors, which is billed either monthly or bi-monthly. The tiered water rates were updated in the 2004 Ordinance 1376 (Appendix G), which also states that potable water consumption charges will be increased by the same percentage as WBMWD increases its charges to the City. The table below shows the current rate structure; units are in dollars per hundred cubic feet ($/HCF).

Table 9.4.1: Monthly Capacity Charges for Potable Water Rates

Meter Size	July 2015	July 2016	July 2017	July 2018	July 2019
5/8" x 3/4" and 3/4"	9.83	10.32	10.84	11.38	11.95
5/8” x 3/4” and 3/4” lifeline	4.92	5.16	5.42	5.69	5.98
1"	22.29	23.41	24.58	25.81	27.10
1” lifeline	11.15	11.70	12.29	12.90	13.55
2”	51.75	54.34	57.06	59.91	62.90
3"	116.50	122.33	128.44	134.86	141.61
4"	206.71	217.04	227.90	239.29	251.25
6”	386.46	405.78	426.07	447.37	469.74
8”	677.49	711.36	746.93	784.28	823.49
10”	1,059.93	1,112.93	1,168.58	1,227.00	1,288.35
12”	1,526.16	1,602.47	1,682.59	1,766.72	1,855.05
16”	2,709.95	2,845.44	2,987.71	3,137.10	3,293.96
20”	4,232.46	4,444.09	4,666.29	4,899.61	5,144.59

Note: Units are in Dollars per Hundred Cubic Feet

Table 9.4.2: Monthly Single Family Residence Consumption Charges for Potable Water Rates

Meter Size	2015	2016	2017	2018	2019
1"	2.3200	2.4360	2.5578	2.6857	2.8200
1” lifeline	1.1600	1.2180	1.2789	1.3428	1.4100
2”	4.2698	4.4833	4.7075	4.9428	5.1900
3"	4.8500	5.0925	5.3471	5.6145	5.8952
4"	4.2698	4.4833	4.7075	4.9428	5.1900

Note: Units are in Dollars per Hundred Cubic Feet

Table 9.4.3: Monthly Multi Family and Non-Residential Consumption Charges for Potable Water Rates

New Tiers	2015	2016	2017	2018	2019
1	2.8242	2.9654	3.1137	3.2694	3.4328
2	3.4500	3.6225	3.8036	3.9938	4.1935
3	3.6500	3.8325	4.0241	4.2253	4.4366
4	3.8314	4.0230	4.2241	4.4353	4.6571

Note: Units are in Dollars per Hundred Cubic Feet

Table 9.4.4: Recycled Water Surcharge

July 2015	July 2016	July 2017	July 2018	July 2019
0.8289	0.8703	0.9138	0.9595	1.0075

Note: Units are in Dollars per Hundred Cubic Feet

Table 9.4.5: Monthly Wastewater Service Fees (in Dollars)

Single Family Residential				
	2015-2016	**2016-2017**	**2017-2018**	**2018-2019**
3/4"	5.24	5.66	6.11	6.60
1”	6.29	6.79	7.33	7.92
1.5”	6.81	7.36	7.95	8.58
2”	7.34	7.92	8.56	9.24
Multi-Family Residential				
	2015-2016	**2016-2017**	**2017-2018**	**2018-2019**
3/4"	8.39	9.06	9.78	10.56
1”	11.79	12.74	13.75	14.85
1.5”	17.81	19.24	20.77	22.44
2”	39.30	42.44	45.83	49.50
3”	136.24	147.13	158.91	171.62
4”	183.39	198.06	213.91	231.02
Lifeline				
	2015-2016	**2016-2017**	**2017-2018**	**2018-2019**
3/4"	2.62	2.83	3.06	3.31
1”	2.62	2.83	3.06	3.31
Commercial (West)				
	2015-2016	**2016-2017**	**2017-2018**	**2018-2019**
3/4"	5.76	6.22	6.72	7.26
1”	14.93	16.12	17.41	18.81
1.5”	26.20	28.29	30.56	33.00
2”	68.12	73.57	79.45	85.81
3”	146.71	158.45	171.12	184.81
4”	550.17	594.18	641.72	693.05
6”	550.17	594.18	641.72	693.05

Commercial (East)

	2015-2016	2016-2017	2017-2018	2018-2019
1”	5.76	6.22	6.72	7.26
1.5”	36.68	39.62	42.79	46.21
2”	104.79	113.17	122.23	132.00
3”	146.71	158.45	171.12	184.81
4”	235.79	254.65	275.02	297.02
6”	602.56	650.77	702.83	759.05

Industrial (West)

	2015-2016	2016-2017	2017-2018	2018-2019
3/4"	5.24	5.66	6.11	6.60
1”	6.29	6.79	7.33	7.92
1.5”	19.39	20.94	22.61	24.42
2”	57.63	62.24	67.22	72.60
3”	146.71	158.45	171.12	184.81
4”	209.59	226.36	244.47	264.02
6”	209.59	226.36	244.47	264.02

Industrial (East)

	2015-2016	2016-2017	2017-2018	2018-2019
3/4"	5.76	6.22	6.72	7.26
1”	14.41	15.56	16.80	18.15
1.5”	26.20	28.29	30.56	33.00
2”	57.63	62.24	67.22	72.60
3”	235.79	254.65	275.02	297.02
4”	366.77	396.12	427.81	462.03
6”	995.55	1,075.19	1,161.20	1,254.10

Institutional

	2015-2016	2016-2017	2017-2018	2018-2019

3/4"	5.24	5.66	6.11	6.60
1”	7.34	7.92	8.56	9.24
1.5”	11.00	11.88	12.83	13.86
2”	15.72	16.98	18.34	19.81
3”	41.92	45.27	48.90	52.81
4”	52.39	56.59	61.11	66.00
6”	52.39	56.59	61.11	66.00

Table 9.4.6: Monthly Sewer Fees

	2015-2016	2016-2017	2017-2018	2018-2019
Single Family Residential	0.58	0.63	0.68	0.73
Multi-Family Residential	0.72	0.78	0.84	0.91
Lifeline	0.29	0.31	0.34	0.37
Commercial	0.83	0.89	0.97	1.04
Industrial	0.83	0.89	0.97	1.04
Institutional	0.72	0.78	0.84	0.91

Note: Units are in Dollars per Hundred Cubic Feet

Table 9.4.7: Monthly Treatment Fees (in Dollars)

Single Family Residential				
	2015-2016	2016-2017	2017-2018	2018-2019
3/4"	15.59	16.63	16.63	16.63
1”	19.82	21.15	21.15	21.15
1.5”	21.45	22.87	22.87	22.87
2”	22.77	24.29	24.29	24.29
Multi-Family Residential				
	2015-2016	2016-2017	2017-2018	2018-2019
3/4"	25.76	27.48	27.48	27.48
1”	36.10	38.50	38.50	38.50

1.5”	55.07	58.74	58.74	58.74
2”	123.50	131.73	131.73	131.73
3”	419.77	447.75	447.75	447.75
4”	577.59	616.10	616.10	616.10
Lifeline				
	2015-2016	**2016-2017**	**2017-2018**	**2018-2019**
3/4"	7.80	8.32	8.32	8.32
1”	9.92	10.58	10.58	10.58
Commercial				
	2015-2016	**2016-2017**	**2017-2018**	**2018-2019**
3/4"	18.39	19.62	19.62	19.62
1”	45.91	48.97	48.97	48.97
1.5”	84.54	90.18	90.18	90.18
2”	222.87	237.73	237.73	237.73
3”	413.08	440.61	440.61	440.61
4”	1,765.09	1,882.76	1,882.76	1,882.76
6”	1,765.09	1,882.76	1,882.76	1,882.76
Industrial				
	2015-2016	**2016-2017**	**2017-2018**	**2018-2019**
3/4"	15.25	16.27	16.27	16.27
1”	20.62	21.99	21.99	21.99
1.5”	59.58	63.55	63.55	63.55
2”	181.87	193.99	193.99	193.99
3”	455.89	486.29	486.29	486.29
4”	647.71	690.89	690.89	690.89
6”	647.71	690.89	690.89	690.89
Institutional				
	2015-2016	**2016-2017**	**2017-2018**	**2018-2019**

3/4"	14.41	15.38	15.38	15.38
1”	22.83	24.35	24.35	24.35
1.5”	34.74	37.06	37.06	37.06
2”	52.68	56.19	56.19	56.19
3”	130.63	139.34	139.34	139.34
4”	154.69	165.00	165.00	165.00
6”	154.69	165.00	165.00	165.00

9.5 PUBLIC EDUCATION AND OUTREACH

The City utilizes several methods to promote water conservation and resource efficiency. The following section discusses public outreach and education programs that the City utilizes.

Public Education and Outreach

The City promotes water conservation and resource efficiency in conjunction with WBMWD. The City distributes public information through bill inserts, brochures, and many special events every year. Additionally, the City established a website, which includes information on water conservation, recycling, and other resource issues, which include the following initiatives.

- The City sends hotels a suggestion card template for them to make and place in rooms and lobby describing water conservation for guests (sheets & towels).
- The City sends restaurants a suggestion table tent template for them to make and place on tables describing water conservation for patrons (water glasses).
- Water conservation cards are printed and placed on city counters, as well as posted reduction tips on walls/counters. Reduction tips and drought information are also provided on the website under the water section, as well as being included in “latest news” section on main page.
- Logos on the City’s Facebook page have been added, where the City posts conservation documentation and reduction tips.
- The City utilizes door hangers and water bill inserts in order to notify customers about updated to water conservation information.
- Video segments are broadcasted on the City’s TV Channel for conservation and reduction clips, and videos are posted on the Water Bill website so users paying bills see it.
- Bus shelter advertisements and street banners are utilized throughout the City for conservation efforts.
- The City also places links and/or images in email signatures from City employees.
- At Parks and Recreation events (e.g., farmer’s market), booths, handouts, or signs are present for public education.
- Information packages are also distributed to rotary/Kiwanis clubs.

As a member of WBMWD, the City participates in the following programs.

- Rebate programs, including High-Efficiency Toilet (HET) distribution events
- Green Living for Apartments and Condos
- Ocean Friendly Landscape Program
- Complete Restroom Retrofit Program
- Recirc & Save Program
- Cash for Kitchens
- Education Programs
- Water & Energy Efficiency in the Motel/Hotel and Schools Sectors
- Greywater Workshops
- Rain Barrel Distribution Events
- Regional Landscape Water Efficiency Program (Turf Removal)
- Landscape Irrigation Efficiency Program (LIEP)
- Car Wash Coupon Program
- Weather-Based Irrigation Controller (WBIC) Events
- Home Depot Plant Sales
- High-Efficiency Nozzle Program
- Water Star Schools Pilot Program

Refer to WBMWD's 2015 Urban Water Management Plan for further information. Table 9.5.1 and 9.5.2 show the implementation schedule and actual/projected expenditures of certain of the above-listed conservation efforts through 2020:

Table 9.5.1: Public Information Actual Expenditures

Program	2006-2010	2011	2012	2013	2014	2015
Bill Inserts/Newsletters/ Brochures	X	X	X	X	X	X
Demonstration Gardens	X	X	X	X	X	X
Special Events/Media Events	X	X	X	X	X	X
Program to Coordinate with other government agencies, industry and public interest groups and media	X	X	X	X	X	X
Actual Expenditures*	$15,000	$3,000	$3,000	$3,000	$3,000	$3,000

Note: Expenditures based on City estimates.

Table 9.5.2: Public Information Projected Expenditures

Program	2016	2017	2018	2019	2020
Bill Inserts/Newsletters/Brochures	X	X	X	X	X
Demonstration Gardens	X	X	X	X	X
Special Events/Media Events	X	X	X	X	X
Program to Coordinate with other government agencies, industry and public interest groups and media	X	X	X	X	X
Projected Expenditures	$3,000	$3,000	$3,000	$3,000	$3,000

School Education Programs

The City, in conjunction with WBMWD and the local school district, works to promote water conservation and resource efficiency at school facilities and to educate students about these issues. WBMWD provides educational materials for elementary through high school grade levels; including State and County water system maps, posters, workbooks, interactive computer software, and videos. WBMWD also sponsors Project Water Education for Teachers (WET) training, science fairs, and water conservation contests. Further descriptions of these programs can be found in Section 7.5 of the 2015 WBMWD UWMP.

9.6 PROGRAMS TO ASSESS & MANAGE DISTRIBUTION SYSTEM REAL LOSS

On average, Water Division crews survey approximately 60 miles of main and lateral pipelines per year. Line replacements are made based on a number of factors: a history of leaks in a particular line over a number of years; flow, or lack thereof, as calculated by flow testing the line; and sizing. If a leak is detected, City Water Division personnel repair the leak in a timely manner.

Table 9.6.1: Actual Distribution Line Surveys

Year	Average Percent of Unaccounted Water	Miles of Distribution Lines Surveyed	Miles of Lines Replaced	Actual Expenditures	Actual Water Savings
2011	6.61%	60	<1	N/A	N/A
2012	6.61%	60	<1	N/A	N/A
2013	6.61%	60	<1	N/A	N/A
2014	6.61%	60	<1	N/A	N/A
2015	6.61%	60	<1	N/A	N/A

Table 9.6.2: Projected Distribution Line Surveys

Year	Average Percent of Unaccounted Water	Miles of Distribution Lines Surveyed	Miles of Lines Replaced	Actual Expenditures	Actual Water Savings
2016	5	60	<1	N/A	N/A
2017	5	60	<1	N/A	N/A
2018	5	60	<1	N/A	N/A
2019	5	60	<1	N/A	N/A
2020	5	60	<1	N/A	N/A

9.7 WATER CONSERVATION PROGRAM COORDINATION & STAFFING SUPPORT

The City's water conservation coordinator is a function performed mainly by the Water Supervisor, who maintains American Water Works Association (AWWA) conservation certification, working in conjunction with WBMWD. The City stresses water conservation via distribution of conservation handouts at City Hall and information booths at various community fairs. Historical and projected expenditures are unavailable as the cost is included in the salary of each employee involved in the program. The conservation coordinator also implements residential water audits at the request of customers. Table 9.7.1 lists a historical summary for the City's Water Division personnel. All Water Division personnel provide support to the Water Conservation Coordinator.

Table 9.7.1: Actual Water Conservation Coordinator Staff Time and Expenditure

Year	Number of Full-Time Positions	Number of Part-Time Staff	Position Supplied by Other Agency	Actual Expenditures
2011	9	0	0	90,000
2012	9	0	0	90,000
2013	9	0	0	90,000
2014	9	0	0	90,000
2015	9	0	0	90,000

Notes: Expenditure units are in dollars

Table 9.7.2: Projected Water Conservation Coordinator Staff Time and Expenditure

Year	Number of Full-Time Positions	Number of Part-Time Staff	Position Supplied by Other Agency	Projected Expenditures
2016	9	0	0	90,000
2017	9	0	0	90,000
2018	9	0	0	90,000
2019	9	0	0	90,000
2020	9	0	0	90,000

Notes: Expenditure units are in dollars

9.8 OTHER DEMAND MANAGEMENT MEASURES

The following subsections outline DMMs not categorized above.

Water Survey Programs for Residential Customers

The City, as a member of WBMWD, is eligible to receive support and funding for residential survey devices. The City provided surveys up to 2010, and then opted to stop supporting this DMM. Historical information on surveys may be provided in previous UWMP report from 2010.

Water Survey Programs for Commercial Customers

Water Use Surveys were conducted in 2015 to assess any improvement areas for water use by commercial properties. Each facility was provide its own report summarizing the site description, an evaluation of landscape water use, water use efficiency recommendations, and an irrigation system inspection. Metrics on how much water and the cost savings (per year based on 2015 rates) are provided to each facility to demonstrate savings. Recommendations from these surveys included any water saving equipment or landscaping changes (e.g., plumbing retrofits, drought-tolerant plants, synthetic turf, etc.).

Residential Rebates

As a member of WBMWD, the City's residents are eligible for rebates on water conserving devices for their residence. Qualifying items include retrofits, high-efficiency clothes washers, high-efficiency toilets (HETs), weather-based irrigation controllers (WBICs), rotating sprinkler nozzles, rain barrels, and soil moisture sensor systems. These water conservation rebate items are discussed further below.

Residential Plumbing Retrofits

In conjunction with WBMWD, the City has participated in the distribution of showerheads, aerators, toilet tank leak detection, and High-Efficiency Toilet (HET) replacement programs since the 1990s. These conservation kits are distributed at the Water Yard and City Hall upon request. The City emphasizes water use surveys and HET replacement programs. The kits are also available to the City customers at WBMWD sponsored festivals and events described in the WBMWD 2016 UWMP. These distributions are not recorded, and therefore, not quantifiable. However, these events continue to provide the consumer with access to information regarding available residential plumbing retrofits, as well as a variety of other water conservation materials

High-Efficiency Washing Machines

The City participates in a High-Efficiency Clothes Washer (HECW) Rebate Program as a member of WBMWD. In 2003, WBMWD in conjunction with the Metropolitan Water District of Southern

California (MWD) collaborated on a program through California State and Federal Agency Cooperation (CALFED), which offered rebates to residents who replaced their existing clothes washer with a high efficiency model. This program offered an incentive of 100 dollars per rebate. Prior to this program, the City participated in another incentive program, which offered similar rebates; however, data for this previous program is unavailable. The program was so successful that when the CALFED portion of the funding expired, MWD continued to provide funding at the request of WBMWD and other member agencies. The new HECWs save 50 percent water, 60 percent electricity, and use less detergent. In 2004, the MWD Board with the support of WBMWD, approved funding to continue the program through 2005. At the same time MWD applied for Proposition 50 funding in an effort to continue the program for another several years. Approximately 800 washing machine rebates were provided throughout WBMWD

High-Efficiency Toilets

In association with WBMWD, the City participates in an HET replacement program. Currently, WBMWD offers rebates up to $50 per replacement. The City is committed to continually working with WBMWD in this conservation effort. As advances in technology create new conservation devices that are more efficient than today's products; the City and WBMWD plan on incorporating them into this program. To illustrate the HET Program's adoption by the City, Table 9.8.4 details the history of residential rebates and distributions of HETs within the WBMWD service area. For all replacements made, water savings total 23.4 gallons per day per device. The annual water savings were calculated incorporating devices installed in previous years.

Table 9.8.4: HET Distribution

Fiscal Year Ending in June of	Number of Rebates	Number of Distributions
2011	--	2,000
2012	--	2,000
2013	--	1,500
2014	--	1,500
2015	9,440	--

Note: Estimates are based on WBMWD district-wide numbers.

Weather-Based Irrigation Controllers

Weather-Based Irrigation Controllers (WBICs) are programmable to use irrigation based on the weather in the area. The United States Environmental Protection Agency (US EPA) has published WaterSense® requirements for certification of devices/controllers. In general, all WaterSense®-certified controllers must utilize evapotranspiration data from the site to regulate or adjust irrigation. WBIC's are distributed for free through WBMWD.

Rain Barrels

Rain barrels collect rain water from the roof and/or gutters and diverts the water to a collection basin (barrel). The water can later be used for irrigation by removing it from the barrel and irrigating plants or lawn areas. Rain barrels are distributed for free through WBMWD. A total of 3,200 rain barrels have been provided by WBMWD, district-wide, since 2013.

Commercial, Industrial, and Institutional Programs

The City, in participation with WBMWD, promotes rebates to businesses, schools, and facilities throughout its service area. Rebates are offered for commercial clothes washers, waterbrooms, cooling tower conductivity controllers, pre-rinse spray nozzles, x-ray machine recirculation devices, and commercial toilets and urinals. Table 9.8.5 demonstrates the City's participation in the installation of retrofit devices, from the district-wide data.

Table 9.8.5: Commercial, Industrial, and Institutional Retrofit Device Distribution

Fiscal Year Ending in June of	Cash for Kitchens	Commercial Restroom Retrofit
2011	101	1,393
2012	96	353
2013	80	1,276
2014	99	375
2015	1,125	82

*Estimates based on WBMWD district-wide numbers.

Large Landscape Conservation Programs and Incentives

The City in conjunction with WBMWD offers programs to assist retail agencies and their large landscape customers to use water efficiently. The programs offered are described below.

Irrigation Survey and Water Budget

The surveys are generally conducted by a team which calculates a water budget that identifies the amount of water necessary for the site based on the size of the landscape and the climate. The water budget would then be used as the water allotment for that site. During a drought, any water use that exceeds the water budget is billed at a higher rate. However, most large landscape areas within the City are already irrigated with reclaimed water.

Irrigation Controller Program

WBMWD has been working with the Project Advisory Committee (PAC) to develop a new WBIC Program. The City recognizes the water savings potential, and as a member of WBMWD will benefit from their current testing of weather-based irrigation controllers in sites that use potable water. WBMWD plans to use the new controllers in areas where recycled water is inaccessible. The funding incentives provided vary on the number of stations and acreage at each site. The funding is used to help pay for the hardware and to help motivate involvement from the community.

Ocean Friendly Gardens

In 2005, The City in conjunction with WBMWD formed a partnership with the Surfrider Foundation to develop “Ocean Friendly Garden” workshops and demonstration gardens. WBMWD obtained state grant funding to finance courses focusing on planting ocean friendly plants and installing weather-based irrigation controllers as a way to reduce urban runoff. The use of water efficient plants and installation of efficient sprinkler controllers can conserve between 20 percent and 50 percent of current water use and reduce water runoff by up to 70 percent. The City does not record the attendance at these events, and therefore, this information is not quantifiable.

9.9 IMPLEMENTATION OVER THE PAST FIVE YEARS

Urban Water Management Planning Act Requirement:

CWC 10631 (f) Provide a description of the supplier's water demand management measures. This description shall include all of the following: (1)(A)…a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years.

Implementation for each DMM is partially covered in the previous sections (Sections 9.2 through 9.8).

9.10 PLANNED IMPLEMENTATION TO ACHIEVE WATER USE TARGETS

Urban Water Management Planning Act Requirement:

CWC 10631 (f) Provide a description of the supplier's water demand management measures. This description shall include all of the following: (1)(A)…The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.

Continued outreach and support for rebates are the City's prime method of implementation. As stated in previous sections, WBMWD provides the support for rebates for its associated agencies.

9.11 MEMBERS OF THE CALIFORNIA URBAN WATER CONSERVATION COUNCIL

Urban Water Management Planning Act Requirement:

CWC 10631 (i) For purposes of this part, urban water suppliers that are members of the California Urban Water Conservation Council shall be deemed in compliance with the requirements of subdivision (f) by complying with all the provisions of the “Memorandum of Understanding Regarding Urban Water Conservation in California,” date December 10, 2008, as it may be amended, and by submitting the annual reports required by Section 6.2 of that memorandum.

WBMWD is a signatory to the California Urban Water Conservation Council (CUWCC) Memorandum of Understanding (MOU) regarding Urban Water Conservation in California.

10 PLAN ADOPTION, SUBMITTAL & IMPLEMENTATION

10.1 COORDINATION

Urban Water Management Planning Act Requirement:

CWC 10635(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

The City of El Segundo (City) provided copies of its 2015 Urban Water Management Plan (UWMP) update to the following agencies within 60 days of submission of the plan to the California Department of Water Resources (DWR):

- County of Los Angeles
- West Basin Municipal Water District

Urban Water Management Planning Act Requirement:

CWC 10642 Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, the notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area.

A draft of the UWMP was made available on the City’s website, and electronic versions of the plan were mailed upon request. A public notice including the time and place of the hearing was advertised in the local newspaper once per week for two consecutive weeks prior to the hearing, according to Government Code Section 6066. A summary of the City’s coordination efforts is provided in Tables 10.1.1 and 10.1.2.

Table 10.1.1: Coordination with Appropriate Agencies

Agency	Participated in UWMP	Commented on the Draft	Attended Public Meetings
County of Los Angeles			
West Basin Municipal Water District			
General Public			
City of El Segundo	✓	✓	✓

Table 10.1.2: Coordination with Appropriate Agencies

Agency	Contacted for Assistance	Received Copy of Draft	Sent Notice of Intention to Adopt	Not Involved / No Information
County of Los Angeles	✓	✓	✓	
West Basin Municipal Water District	✓	✓	✓	
General Public	✓	✓	✓	
City of El Segundo	✓	✓	✓	

10.2 PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

> ***Urban Water Management Planning Act Requirement:***
>
> *CWC 10621(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).*

All amendments to the City’s 2015 UWMP shall be adopted and filed consistent with the UWMP “Act” requirements.

> ***Urban Water Management Planning Act Requirement:***
>
> *CWC 10642 After the hearing, the plan shall be adopted as prepared or as modified after the hearing.*

The plan was adopted by the City Council on July 19, 2016 as prepared. A copy of the adoption resolution is provided in Appendix B.

> ***Urban Water Management Planning Act Requirement:***
>
> *CWC 10643 An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.*

The City will implement the strategies set forth in the plan immediately upon adoption by the City Council. Details on the implementation of specific sections are detailed in their respective sections of the plan.

Urban Water Management Planning Act Requirement:

CWC 10644(a) An urban water supplier shall submit to the department, the California State library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

The City will submit copies of its 2015 UWMP to the following agencies within 30 days after adoption:

The California Department of Water Resources

- The California State Library
- The City of El Segundo

Additionally, any amendments or changes to the plan will be submitted to the above agencies within 30 days after adoption.

Urban Water Management Planning Act Requirement:

CWC 10645 Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

The City will provide an electronic version of the final 2015 UWMP on its website for public review within 30 days of filing the plan with the California Department of Water Resources. Additionally, a hard copy will be available for review at the City Hall building, located at 350 Main Street, El Segundo, California 90245.

A

PUBLIC NOTIFICATION LETTERS

Ryan Bay

From: Ryan Bray <Ryan.Bray@RMPCorp.com>
Sent: Thursday, June 30, 2016 5:07 PM
To: 'Leighanne Kirk'
Cc: 'Xu, Lifan'
Subject: City of El Segundo Urban Water Management Plan Draft

Good Afternoon,

The City of El Segundo is nearing the end of its 2015 Urban Water Management Plan update. As a major part of the City's water supply system, we wanted to provide you with an opportunity to review the City's draft plan and provide comments. The document may be viewed here and comments can be directed to Lifan Xu at lxu@elsegundo.com or included at the City Council meeting currently scheduled for July 19, 2016.

Thank you for your support of the City's Urban Water Management Plan update effort.

Best regards,

--
Mr. Ryan Bray
Technical Specialist
949-282-0123 xt 238 | 877-532-0806

Risk Management Professionals, Inc.
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Ryan Bray

From: Ryan Bray <Ryan.Bray@RMPCorp.com>
Sent: Thursday, June 30, 2016 5:09 PM
To: 'kallen@dpw.lacounty.gov'
Cc: 'Xu, Lifan'
Subject: City of El Segundo Urban Water Management Plan Draft

Kirk Allen
Associate Civil Engineer
Los Angeles County Department of Public Works
Alhambra, CA

Good Afternoon Mr. Allen,

The City of El Segundo is nearing the end of its 2015 Urban Water Management Plan update. As the City is part of the County's water supply system, we wanted to provide you with an opportunity to review the City's draft plan and provide comments. The document may be viewed here and comments can be directed to Lifan Xu at lxu@elsegundo.com or included at the City Council meeting currently scheduled for July 19, 2016.

Thank you for your support of the City's Urban Water Management Plan update effort.

Best regards,

--
Mr. Ryan Bray
Technical Specialist
949-282-0123 xt 238 | 877-532-0806

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From: Ryan Bray <Ryan.Bray@RMPCorp.com>
Sent: Thursday, May 5, 2016 3:34 PM
To: 'leighannek@westbasin.org'
Cc: 'Xu, Lifan'
Subject: City of El Segundo - Urban Water Management Plan Update 2015

Leighanne R. Kirk, M.S.
Senior Water Resources Analyst
West Basin Municipal Water District
Carson, CA

Good Afternoon Ms. Kirk,

I am writing to inform you, on behalf of the City of El Segundo (City), that the City is endeavoring to update its Urban Water Management Plan. As you are involved with urban water planning for the West Basin Municipal Water District, I wanted to offer to make the City's document available in the event you would like to make comments or provide suggestions that would help make the local plan cohesive with the District's plan. A final draft will be available later this month, please let me know if you are interested in reviewing any of the documentation when it becomes available.

Thank you!

--
Mr. Ryan Bray
949-282-0123 xt 238 | 877-532-0806

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Ryan Bray

From: Ryan Bray <Ryan.Bray@RMPCorp.com>
Sent: Tuesday, April 26, 2016 3:59 PM
To: 'kallen@dpw.lacounty.gov'
Cc: 'lxu@elsegundo.org'
Subject: City of El Segundo - Urban Water Management Plan Update 2015

Kirk Allen
Associate Civil Engineer
Los Angeles County Department of Public Works
Alhambra, CA

Good Afternoon Mr. Allen,

I am writing to inform you, on behalf of the City of El Segundo (City), that the City is endeavoring to update its Urban Water Management Plan. As you are involved with urban water planning for the County, I wanted to offer to make the City's document available in the event you would like to make comments or provide suggestions that would help make the local plan cohesive with the County plan. A final draft will be available in May, please let me know if you are interested in reviewing any of the documentation when it becomes available.

Thank you!

--
Mr. Ryan Bray
949-282-0123 xt 238 | 877-532-0806

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B UWMP ADOPTION RESOLUTION

RESOLUTION NO. __

A RESOLUTION ADOPTING THE CITY OF EL SEGUNDO'S 2015 URBAN WATER MANAGERMENT PLAN

The City Council of the City of El Segundo does resolve as follows:

SECTION 1: The City Council finds and declares as follows:

A. California Water Code sections 10610 to 10656 require water suppliers to prepare an Urban Water Management Plan (UWMP) to promote water demand management and efficient use in their service areas;

B. The city of El Segundo is the Water Supplier for citizens and businesses of the city of El Segundo and is required to update, adopt, and submit its UWMP to the California Department of Water Resources at least every five (5) years;

C. The UWMP addresses projected water supply and demand over a twenty (20) years period in five (5) year increments. It identifies and quantifies adequate water supplies, including recycled water, for existing and future demands in normal, dry, and drought years, and also lays out a water conservation program to encourage the efficient use of the City's water resources.

SECTION 2: Pursuant to Water Code sections 10610 to 10656, the City Council adopts the 2015 Urban Water Management Plan. A copy of the Urban Water Management Plan is incorporated by reference into tis resolution and is filed with the City Clerk's Office.

SECTION 3: The City Clerk is directed to certify the adoption of this Resolution.

SECTION 4: This Resolution will become effective immediately upon adoption and remain effective unless superseded by a subsequent resolution.

PASSED AND ADOPTED this ___ day of , 2016.

____
Suzanne Fuentes, Mayor

ATTEST:

____
Tracy Weaver, City Clerk

APPROVED AS TO FORM:
MARK D. HENSLEY, City Attorney

By: ______________________________
Karl H. Berger, Assistant City Attorney

C URBAN WATER MANAGEMENT PLANNING ACT

CALIFORNIA WATER CODE DIVISION 6
PART 2.6. URBAN WATER MANAGEMENT PLANNING

All California Codes have been updated to include the 2010 Statutes.

WATER CODE
SECTION 10610-10610.4

10610. This part shall be known and may be cited as the "Urban Water Management Planning Act."

10610.2. (a) The Legislature finds and declares all of the following:

(1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.

(2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.

(3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.

(4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.

(5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.

(6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.

(7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.

(8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.

(9) The quality of source supplies can have a significant impact

on water management strategies and supply reliability.
(b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.

10610.4. The Legislature finds and declares that it is the policy of the state as follows:
(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.
(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.
(c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

WATER CODE
SECTION 10611-10617

10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

10611.5. "Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.

10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.

10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

WATER CODE
SECTION 10620-10621

10620. (a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d) (1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

10621. (a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.

(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

WATER CODE
SECTION 10630-10634

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

10631. A plan shall be adopted in accordance with this chapter that shall do all of the following:

(a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c) (1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

(A) An average water year.

(B) A single dry water year.

(C) Multiple dry water years.

(2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

(e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses:

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.

(G) Sales to other agencies.

(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.

(I) Agricultural.

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

(A) Water survey programs for single-family residential and multifamily residential customers.

(B) Residential plumbing retrofit.

(C) System water audits, leak detection, and repair.

(D) Metering with commodity rates for all new connections and retrofit of existing connections.

(E) Large landscape conservation programs and incentives.

(F) High-efficiency washing machine rebate programs.

(G) Public information programs.

(H) School education programs.

(I) Conservation programs for commercial, industrial, and institutional accounts.

(J) Wholesale agency programs.
(K) Conservation pricing.
(L) Water conservation coordinator.
(M) Water waste prohibition.
(N) Residential ultra-low-flush toilet replacement programs.

(2) A schedule of implementation for all water demand management measures proposed or described in the plan.

(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

(1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.

(2) Include a cost-benefit analysis, identifying total benefits and total costs.

(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.

(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

(j) For purposes of this part, urban water suppliers that are members of the California Urban Water Conservation Council shall be deemed in compliance with the requirements of subdivisions (f) and (g) by complying with all the provisions of the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated December 10, 2008, as it may be amended, and by submitting the annual reports required by Section 6.2 of that memorandum.

(k) Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

10631.1. (a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

(b) It is the intent of the Legislature that the identification of projected water use for single-family and multifamily residential housing for lower income households will assist a supplier in complying with the requirement under Section 65589.7 of the Government Code to grant a priority for the provision of service to housing units affordable to lower income households.

10631.5. (a) (1) Beginning January 1, 2009, the terms of, and eligibility for, a water management grant or loan made to an urban water supplier and awarded or administered by the department, state board, or California Bay-Delta Authority or its successor agency shall be conditioned on the implementation of the water demand management measures described in Section 10631, as determined by the department pursuant to subdivision (b).

(2) For the purposes of this section, water management grants and loans include funding for programs and projects for surface water or groundwater storage, recycling, desalination, water conservation, water supply reliability, and water supply augmentation. This section does not apply to water management projects funded by the federal American Recovery and Reinvestment Act of 2009 (Public Law 111-5).

(3) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if the urban water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the water demand management measures. The supplier may request grant or loan funds to implement the water demand management measures to the extent the request is consistent with the eligibility requirements applicable to the water management funds.

(4) (A) Notwithstanding paragraph (1), the department shall

determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if an urban water supplier submits to the department for approval documentation demonstrating that a water demand management measure is not locally cost effective. If the department determines that the documentation submitted by the urban water supplier fails to demonstrate that a water demand management measure is not locally cost effective, the department shall notify the urban water supplier and the agency administering the grant or loan program within 120 days that the documentation does not satisfy the requirements for an exemption, and include in that notification a detailed statement to support the determination.

(B) For purposes of this paragraph, "not locally cost effective" means that the present value of the local benefits of implementing a water demand management measure is less than the present value of the local costs of implementing that measure.

(b) (1) The department, in consultation with the state board and the California Bay-Delta Authority or its successor agency, and after soliciting public comment regarding eligibility requirements, shall develop eligibility requirements to implement the requirement of paragraph (1) of subdivision (a). In establishing these eligibility requirements, the department shall do both of the following:

(A) Consider the conservation measures described in the Memorandum of Understanding Regarding Urban Water Conservation in California, and alternative conservation approaches that provide equal or greater water savings.

(B) Recognize the different legal, technical, fiscal, and practical roles and responsibilities of wholesale water suppliers and retail water suppliers.

(2) (A) For the purposes of this section, the department shall determine whether an urban water supplier is implementing all of the water demand management measures described in Section 10631 based on either, or a combination, of the following:

(i) Compliance on an individual basis.

(ii) Compliance on a regional basis. Regional compliance shall require participation in a regional conservation program consisting of two or more urban water suppliers that achieves the level of conservation or water efficiency savings equivalent to the amount of conservation or savings achieved if each of the participating urban water suppliers implemented the water demand management measures. The urban water supplier administering the regional program shall provide participating urban water suppliers and the department with data to demonstrate that the regional program is consistent with this clause. The department shall review the data to determine whether the urban water suppliers in the regional program are meeting the eligibility requirements.

(B) The department may require additional information for any determination pursuant to this section.

(3) The department shall not deny eligibility to an urban water supplier in compliance with the requirements of this section that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of

the agencies participating in the project or plan is not implementing all of the water demand management measures described in Section 10631.

(c) In establishing guidelines pursuant to the specific funding authorization for any water management grant or loan program subject to this section, the agency administering the grant or loan program shall include in the guidelines the eligibility requirements developed by the department pursuant to subdivision (b).

(d) Upon receipt of a water management grant or loan application by an agency administering a grant and loan program subject to this section, the agency shall request an eligibility determination from the department with respect to the requirements of this section. The department shall respond to the request within 60 days of the request.

(e) The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities. In addition, for urban water suppliers that are signatories to the Memorandum of Understanding Regarding Urban Water Conservation in California and submit biennial reports to the California Urban Water Conservation Council in accordance with the memorandum, the department may use these reports to assist in tracking the implementation of water demand management measures.

(f) This section shall remain in effect only until July 1, 2016, and as of that date is repealed, unless a later enacted statute, that is enacted before July 1, 2016, deletes or extends that date.

10631.7. The department, in consultation with the California Urban Water Conservation Council, shall convene an independent technical panel to provide information and recommendations to the department and the Legislature on new demand management measures, technologies, and approaches. The panel shall consist of no more than seven members, who shall be selected by the department to reflect a balanced representation of experts. The panel shall have at least one, but no more than two, representatives from each of the following: retail water suppliers, environmental organizations, the business community, wholesale water suppliers, and academia. The panel shall be convened by January 1, 2009, and shall report to the Legislature no later than January 1, 2010, and every five years thereafter. The department shall review the panel report and include in the final report to the Legislature the department's recommendations and comments regarding the panel process and the panel's recommendations.

10632. (a) The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier:

(1) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions that are applicable to each stage.

(2) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic

sequence for the agency's water supply.

(3) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

(4) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

(5) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

(6) Penalties or charges for excessive use, where applicable.

(7) An analysis of the impacts of each of the actions and conditions described in paragraphs (1) to (6), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

(8) A draft water shortage contingency resolution or ordinance.

(9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

(b) Commencing with the urban water management plan update due December 31, 2015, for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:

(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

WATER CODE
SECTION 10635

10635. (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

WATER CODE
SECTION 10640-10645

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630).

The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

10641. An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643. An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644. (a) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

(b) The department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall identify the exemplary elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has submitted its plan to the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

(c) (1) For the purpose of identifying the exemplary elements of the individual plans, the department shall identify in the report those water demand management measures adopted and implemented by specific urban water suppliers, and identified pursuant to Section

10631, that achieve water savings significantly above the levels established by the department to meet the requirements of Section 10631.5.

(2) The department shall distribute to the panel convened pursuant to Section 10631.7 the results achieved by the implementation of those water demand management measures described in paragraph (1).

(3) The department shall make available to the public the standard the department will use to identify exemplary water demand management measures.

10645. Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

WATER CODE
SECTION 10650-10656

10650. Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.

10651. In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

10652. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

10653. The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the

"Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.

10655. If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

10656. An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

D

SBx7-7

Senate Bill No. 7

CHAPTER 4

An act to amend and repeal Section 10631.5 of, to add Part 2.55 (commencing with Section 10608) to Division 6 of, and to repeal and add Part 2.8 (commencing with Section 10800) of Division 6 of, the Water Code, relating to water.

[Approved by Governor November 10, 2009. Filed with
Secretary of State November 10, 2009.]

LEGISLATIVE COUNSEL'S DIGEST

SB 7, Steinberg. Water conservation.

(1) Existing law requires the Department of Water Resources to convene an independent technical panel to provide information to the department and the Legislature on new demand management measures, technologies, and approaches. "Demand management measures" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

This bill would require the state to achieve a 20% reduction in urban per capita water use in California by December 31, 2020. The state would be required to make incremental progress towards this goal by reducing per capita water use by at least 10% on or before December 31, 2015. The bill would require each urban retail water supplier to develop urban water use targets and an interim urban water use target, in accordance with specified requirements. The bill would require agricultural water suppliers to implement efficient water management practices. The bill would require the department, in consultation with other state agencies, to develop a single standardized water use reporting form. The bill, with certain exceptions, would provide that urban retail water suppliers, on and after July 1, 2016, and agricultural water suppliers, on and after July 1, 2013, are not eligible for state water grants or loans unless they comply with the water conservation requirements established by the bill. The bill would repeal, on July 1, 2016, an existing requirement that conditions eligibility for certain water management grants or loans to an urban water supplier on the implementation of certain water demand management measures.

(2) Existing law, until January 1, 1993, and thereafter only as specified, requires certain agricultural water suppliers to prepare and adopt water management plans.

This bill would revise existing law relating to agricultural water management planning to require agricultural water suppliers to prepare and adopt agricultural water management plans with specified components on or before December 31, 2012, and update those plans on or before December

31, 2015, and on or before December 31 every 5 years thereafter. An agricultural water supplier that becomes an agricultural water supplier after December 31, 2012, would be required to prepare and adopt an agricultural water management plan within one year after becoming an agricultural water supplier. The agricultural water supplier would be required to notify each city or county within which the supplier provides water supplies with regard to the preparation or review of the plan. The bill would require the agricultural water supplier to submit copies of the plan to the department and other specified entities. The bill would provide that an agricultural water supplier is not eligible for state water grants or loans unless the supplier complies with the water management planning requirements established by the bill.

(3) The bill would take effect only if SB 1 and SB 6 of the 2009–10 7th Extraordinary Session of the Legislature are enacted and become effective.

The people of the State of California do enact as follows:

SECTION 1. Part 2.55 (commencing with Section 10608) is added to Division 6 of the Water Code, to read:

PART 2.55. SUSTAINABLE WATER USE AND DEMAND REDUCTION

Chapter 1. General Declarations and Policy

10608. The Legislature finds and declares all of the following:

(a) Water is a public resource that the California Constitution protects against waste and unreasonable use.

(b) Growing population, climate change, and the need to protect and grow California’s economy while protecting and restoring our fish and wildlife habitats make it essential that the state manage its water resources as efficiently as possible.

(c) Diverse regional water supply portfolios will increase water supply reliability and reduce dependence on the Delta.

(d) Reduced water use through conservation provides significant energy and environmental benefits, and can help protect water quality, improve streamflows, and reduce greenhouse gas emissions.

(e) The success of state and local water conservation programs to increase efficiency of water use is best determined on the basis of measurable outcomes related to water use or efficiency.

(f) Improvements in technology and management practices offer the potential for increasing water efficiency in California over time, providing an essential water management tool to meet the need for water for urban, agricultural, and environmental uses.

(g) The Governor has called for a 20 percent per capita reduction in urban water use statewide by 2020.

(h) The factors used to formulate water use efficiency targets can vary significantly from location to location based on factors including weather, patterns of urban and suburban development, and past efforts to enhance water use efficiency.

(i) Per capita water use is a valid measure of a water provider's efforts to reduce urban water use within its service area. However, per capita water use is less useful for measuring relative water use efficiency between different water providers. Differences in weather, historical patterns of urban and suburban development, and density of housing in a particular location need to be considered when assessing per capita water use as a measure of efficiency.

10608.4. It is the intent of the Legislature, by the enactment of this part, to do all of the following:

(a) Require all water suppliers to increase the efficiency of use of this essential resource.

(b) Establish a framework to meet the state targets for urban water conservation identified in this part and called for by the Governor.

(c) Measure increased efficiency of urban water use on a per capita basis.

(d) Establish a method or methods for urban retail water suppliers to determine targets for achieving increased water use efficiency by the year 2020, in accordance with the Governor's goal of a 20-percent reduction.

(e) Establish consistent water use efficiency planning and implementation standards for urban water suppliers and agricultural water suppliers.

(f) Promote urban water conservation standards that are consistent with the California Urban Water Conservation Council's adopted best management practices and the requirements for demand management in Section 10631.

(g) Establish standards that recognize and provide credit to water suppliers that made substantial capital investments in urban water conservation since the drought of the early 1990s.

(h) Recognize and account for the investment of urban retail water suppliers in providing recycled water for beneficial uses.

(i) Require implementation of specified efficient water management practices for agricultural water suppliers.

(j) Support the economic productivity of California's agricultural, commercial, and industrial sectors.

(k) Advance regional water resources management.

10608.8. (a) (1) Water use efficiency measures adopted and implemented pursuant to this part or Part 2.8 (commencing with Section 10800) are water conservation measures subject to the protections provided under Section 1011.

(2) Because an urban agency is not required to meet its urban water use target until 2020 pursuant to subdivision (b) of Section 10608.24, an urban retail water supplier's failure to meet those targets shall not establish a violation of law for purposes of any state administrative or judicial proceeding prior to January 1, 2021. Nothing in this paragraph limits the use of data reported to the department or the board in litigation or an

administrative proceeding. This paragraph shall become inoperative on January 1, 2021.

(3) To the extent feasible, the department and the board shall provide for the use of water conservation reports required under this part to meet the requirements of Section 1011 for water conservation reporting.

(b) This part does not limit or otherwise affect the application of Chapter 3.5 (commencing with Section 11340), Chapter 4 (commencing with Section 11370), Chapter 4.5 (commencing with Section 11400), and Chapter 5 (commencing with Section 11500) of Part 1 of Division 3 of Title 2 of the Government Code.

(c) This part does not require a reduction in the total water used in the agricultural or urban sectors, because other factors, including, but not limited to, changes in agricultural economics or population growth may have greater effects on water use. This part does not limit the economic productivity of California's agricultural, commercial, or industrial sectors.

(d) The requirements of this part do not apply to an agricultural water supplier that is a party to the Quantification Settlement Agreement, as defined in subdivision (a) of Section 1 of Chapter 617 of the Statutes of 2002, during the period within which the Quantification Settlement Agreement remains in effect. After the expiration of the Quantification Settlement Agreement, to the extent conservation water projects implemented as part of the Quantification Settlement Agreement remain in effect, the conserved water created as part of those projects shall be credited against the obligations of the agricultural water supplier pursuant to this part.

Chapter 2. Definitions

10608.12. Unless the context otherwise requires, the following definitions govern the construction of this part:

(a) "Agricultural water supplier" means a water supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding recycled water. "Agricultural water supplier" includes a supplier or contractor for water, regardless of the basis of right, that distributes or sells water for ultimate resale to customers. "Agricultural water supplier" does not include the department.

(b) "Base daily per capita water use" means any of the following:

(1) The urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the calculation described in paragraph (1) up to an additional five years to a maximum of

a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(3) For the purposes of Section 10608.22, the urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.

(c) "Baseline commercial, industrial, and institutional water use" means an urban retail water supplier's base daily per capita water use for commercial, industrial, and institutional users.

(d) "Commercial water user" means a water user that provides or distributes a product or service.

(e) "Compliance daily per capita water use" means the gross water use during the final year of the reporting period, reported in gallons per capita per day.

(f) "Disadvantaged community" means a community with an annual median household income that is less than 80 percent of the statewide annual median household income.

(g) "Gross water use" means the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:

(1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier.

(2) The net volume of water that the urban retail water supplier places into long-term storage.

(3) The volume of water the urban retail water supplier conveys for use by another urban water supplier.

(4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24.

(h) "Industrial water user" means a water user that is primarily a manufacturer or processor of materials as defined by the North American Industry Classification System code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development.

(i) "Institutional water user" means a water user dedicated to public service. This type of user includes, among other users, higher education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions.

(j) "Interim urban water use target" means the midpoint between the urban retail water supplier's base daily per capita water use and the urban retail water supplier's urban water use target for 2020.

(k) "Locally cost effective" means that the present value of the local benefits of implementing an agricultural efficiency water management practice is greater than or equal to the present value of the local cost of implementing that measure.

(*l*) "Process water" means water used for producing a product or product content or water used for research and development, including, but not limited to, continuous manufacturing processes, water used for testing and maintaining equipment used in producing a product or product content, and water used in combined heat and power facilities used in producing a product or product content. Process water does not mean incidental water uses not related to the production of a product or product content, including, but not limited to, water used for restrooms, landscaping, air conditioning, heating, kitchens, and laundry.

(m) "Recycled water" means recycled water, as defined in subdivision (n) of Section 13050, that is used to offset potable demand, including recycled water supplied for direct use and indirect potable reuse, that meets the following requirements, where applicable:

(1) For groundwater recharge, including recharge through spreading basins, water supplies that are all of the following:

(A) Metered.

(B) Developed through planned investment by the urban water supplier or a wastewater treatment agency.

(C) Treated to a minimum tertiary level.

(D) Delivered within the service area of an urban retail water supplier or its urban wholesale water supplier that helps an urban retail water supplier meet its urban water use target.

(2) For reservoir augmentation, water supplies that meet the criteria of paragraph (1) and are conveyed through a distribution system constructed specifically for recycled water.

(n) "Regional water resources management" means sources of supply resulting from watershed-based planning for sustainable local water reliability or any of the following alternative sources of water:

(1) The capture and reuse of stormwater or rainwater.

(2) The use of recycled water.

(3) The desalination of brackish groundwater.

(4) The conjunctive use of surface water and groundwater in a manner that is consistent with the safe yield of the groundwater basin.

(o) "Reporting period" means the years for which an urban retail water supplier reports compliance with the urban water use targets.

(p) "Urban retail water supplier" means a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes.

(q) "Urban water use target" means the urban retail water supplier's targeted future daily per capita water use.

(r) "Urban wholesale water supplier," means a water supplier, either publicly or privately owned, that provides more than 3,000 acre-feet of water annually at wholesale for potable municipal purposes.

Chapter 3. Urban Retail Water Suppliers

10608.16. (a) The state shall achieve a 20-percent reduction in urban per capita water use in California on or before December 31, 2020.

(b) The state shall make incremental progress towards the state target specified in subdivision (a) by reducing urban per capita water use by at least 10 percent on or before December 31, 2015.

10608.20. (a) (1) Each urban retail water supplier shall develop urban water use targets and an interim urban water use target by July 1, 2011. Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28, and may determine the targets on a fiscal year or calendar year basis.

(2) It is the intent of the Legislature that the urban water use targets described in subdivision (a) cumulatively result in a 20-percent reduction from the baseline daily per capita water use by December 31, 2020.

(b) An urban retail water supplier shall adopt one of the following methods for determining its urban water use target pursuant to subdivision (a):

(1) Eighty percent of the urban retail water supplier's baseline per capita daily water use.

(2) The per capita daily water use that is estimated using the sum of the following performance standards:

(A) For indoor residential water use, 55 gallons per capita daily water use as a provisional standard. Upon completion of the department's 2016 report to the Legislature pursuant to Section 10608.42, this standard may be adjusted by the Legislature by statute.

(B) For landscape irrigated through dedicated or residential meters or connections, water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Chapter 2.7 (commencing with Section 490) of Division 2 of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992. An urban retail water supplier using the approach specified in this subparagraph shall use satellite imagery, site visits, or other best available technology to develop an accurate estimate of landscaped areas.

(C) For commercial, industrial, and institutional uses, a 10-percent reduction in water use from the baseline commercial, industrial, and institutional water use by 2020.

(3) Ninety-five percent of the applicable state hydrologic region target, as set forth in the state's draft 20x2020 Water Conservation Plan (dated April 30, 2009). If the service area of an urban water supplier includes more than one hydrologic region, the supplier shall apportion its service area to each region based on population or area.

(4) A method that shall be identified and developed by the department, through a public process, and reported to the Legislature no later than December 31, 2010. The method developed by the department shall identify per capita targets that cumulatively result in a statewide 20-percent reduction in urban daily per capita water use by December 31, 2020. In developing urban daily per capita water use targets, the department shall do all of the following:

(A) Consider climatic differences within the state.

(B) Consider population density differences within the state.

(C) Provide flexibility to communities and regions in meeting the targets.

(D) Consider different levels of per capita water use according to plant water needs in different regions.

(E) Consider different levels of commercial, industrial, and institutional water use in different regions of the state.

(F) Avoid placing an undue hardship on communities that have implemented conservation measures or taken actions to keep per capita water use low.

(c) If the department adopts a regulation pursuant to paragraph (4) of subdivision (b) that results in a requirement that an urban retail water supplier achieve a reduction in daily per capita water use that is greater than 20 percent by December 31, 2020, an urban retail water supplier that adopted the method described in paragraph (4) of subdivision (b) may limit its urban water use target to a reduction of not more than 20 percent by December 31, 2020, by adopting the method described in paragraph (1) of subdivision (b).

(d) The department shall update the method described in paragraph (4) of subdivision (b) and report to the Legislature by December 31, 2014. An urban retail water supplier that adopted the method described in paragraph (4) of subdivision (b) may adopt a new urban daily per capita water use target pursuant to this updated method.

(e) An urban retail water supplier shall include in its urban water management plan required pursuant to Part 2.6 (commencing with Section 10610) due in 2010 the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.

(f) When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.

(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).

(h) (1) The department, through a public process and in consultation with the California Urban Water Conservation Council, shall develop technical methodologies and criteria for the consistent implementation of this part, including, but not limited to, both of the following:

(A) Methodologies for calculating base daily per capita water use, baseline commercial, industrial, and institutional water use, compliance daily per capita water use, gross water use, service area population, indoor residential water use, and landscaped area water use.

(B) Criteria for adjustments pursuant to subdivisions (d) and (e) of Section 10608.24.

(2) The department shall post the methodologies and criteria developed pursuant to this subdivision on its Internet Web site, and make written copies

available, by October 1, 2010. An urban retail water supplier shall use the methods developed by the department in compliance with this part.

(i) (1) The department shall adopt regulations for implementation of the provisions relating to process water in accordance with subdivision (*l*) of Section 10608.12, subdivision (e) of Section 10608.24, and subdivision (d) of Section 10608.26.

(2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

(j) An urban retail water supplier shall be granted an extension to July 1, 2011, for adoption of an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) due in 2010 to allow use of technical methodologies developed by the department pursuant to paragraph (4) of subdivision (b) and subdivision (h). An urban retail water supplier that adopts an urban water management plan due in 2010 that does not use the methodologies developed by the department pursuant to subdivision (h) shall amend the plan by July 1, 2011, to comply with this part.

10608.22. Notwithstanding the method adopted by an urban retail water supplier pursuant to Section 10608.20, an urban retail water supplier's per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use as defined in paragraph (3) of subdivision (b) of Section 10608.12. This section does not apply to an urban retail water supplier with a base daily per capita water use at or below 100 gallons per capita per day.

10608.24. (a) Each urban retail water supplier shall meet its interim urban water use target by December 31, 2015.

(b) Each urban retail water supplier shall meet its urban water use target by December 31, 2020.

(c) An urban retail water supplier's compliance daily per capita water use shall be the measure of progress toward achievement of its urban water use target.

(d) (1) When determining compliance daily per capita water use, an urban retail water supplier may consider the following factors:

(A) Differences in evapotranspiration and rainfall in the baseline period compared to the compliance reporting period.

(B) Substantial changes to commercial or industrial water use resulting from increased business output and economic development that have occurred during the reporting period.

(C) Substantial changes to institutional water use resulting from fire suppression services or other extraordinary events, or from new or expanded operations, that have occurred during the reporting period.

(2) If the urban retail water supplier elects to adjust its estimate of compliance daily per capita water use due to one or more of the factors described in paragraph (1), it shall provide the basis for, and data supporting, the adjustment in the report required by Section 10608.40.

(e) When developing the urban water use target pursuant to Section 10608.20, an urban retail water supplier that has a substantial percentage of industrial water use in its service area, may exclude process water from the calculation of gross water use to avoid a disproportionate burden on another customer sector.

(f) (1) An urban retail water supplier that includes agricultural water use in an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) may include the agricultural water use in determining gross water use. An urban retail water supplier that includes agricultural water use in determining gross water use and develops its urban water use target pursuant to paragraph (2) of subdivision (b) of Section 10608.20 shall use a water efficient standard for agricultural irrigation of 100 percent of reference evapotranspiration multiplied by the crop coefficient for irrigated acres.

(2) An urban retail water supplier, that is also an agricultural water supplier, is not subject to the requirements of Chapter 4 (commencing with Section 10608.48), if the agricultural water use is incorporated into its urban water use target pursuant to paragraph (1).

10608.26. (a) In complying with this part, an urban retail water supplier shall conduct at least one public hearing to accomplish all of the following:

(1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part.

(2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part.

(3) Adopt a method, pursuant to subdivision (b) of Section 10608.20, for determining its urban water use target.

(b) In complying with this part, an urban retail water supplier may meet its urban water use target through efficiency improvements in any combination among its customer sectors. An urban retail water supplier shall avoid placing a disproportionate burden on any customer sector.

(c) For an urban retail water supplier that supplies water to a United States Department of Defense military installation, the urban retail water supplier's implementation plan for complying with this part shall consider the United States Department of Defense military installation's requirements under federal Executive Order 13423.

(d) (1) Any ordinance or resolution adopted by an urban retail water supplier after the effective date of this section shall not require existing customers as of the effective date of this section, to undertake changes in product formulation, operations, or equipment that would reduce process water use, but may provide technical assistance and financial incentives to those customers to implement efficiency measures for process water. This section shall not limit an ordinance or resolution adopted pursuant to a declaration of drought emergency by an urban retail water supplier.

(2) This part shall not be construed or enforced so as to interfere with the requirements of Chapter 4 (commencing with Section 113980) to Chapter 13 (commencing with Section 114380), inclusive, of Part 7 of Division 104 of the Health and Safety Code, or any requirement or standard for the protection of public health, public safety, or worker safety established by federal, state, or local government or recommended by recognized standard setting organizations or trade associations.

10608.28. (a) An urban retail water supplier may meet its urban water use target within its retail service area, or through mutual agreement, by any of the following:

(1) Through an urban wholesale water supplier.

(2) Through a regional agency authorized to plan and implement water conservation, including, but not limited to, an agency established under the Bay Area Water Supply and Conservation Agency Act (Division 31 (commencing with Section 81300)).

(3) Through a regional water management group as defined in Section 10537.

(4) By an integrated regional water management funding area.

(5) By hydrologic region.

(6) Through other appropriate geographic scales for which computation methods have been developed by the department.

(b) A regional water management group, with the written consent of its member agencies, may undertake any or all planning, reporting, and implementation functions under this chapter for the member agencies that consent to those activities. Any data or reports shall provide information both for the regional water management group and separately for each consenting urban retail water supplier and urban wholesale water supplier.

10608.32. All costs incurred pursuant to this part by a water utility regulated by the Public Utilities Commission may be recoverable in rates subject to review and approval by the Public Utilities Commission, and may be recorded in a memorandum account and reviewed for reasonableness by the Public Utilities Commission.

10608.36. Urban wholesale water suppliers shall include in the urban water management plans required pursuant to Part 2.6 (commencing with Section 10610) an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.

10608.40. Urban water retail suppliers shall report to the department on their progress in meeting their urban water use targets as part of their urban water management plans submitted pursuant to Section 10631. The data shall be reported using a standardized form developed pursuant to Section 10608.52.

10608.42. The department shall review the 2015 urban water management plans and report to the Legislature by December 31, 2016, on progress towards achieving a 20-percent reduction in urban water use by December 31, 2020. The report shall include recommendations on changes to water efficiency standards or urban water use targets in order to achieve the 20-percent reduction and to reflect updated efficiency information and technology changes.

10608.43. The department, in conjunction with the California Urban Water Conservation Council, by April 1, 2010, shall convene a representative task force consisting of academic experts, urban retail water suppliers, environmental organizations, commercial water users, industrial water users, and institutional water users to develop alternative best management practices for commercial, industrial, and institutional users and an assessment of the potential statewide water use efficiency improvement in the commercial, industrial, and institutional sectors that would result from implementation of these best management practices. The taskforce, in conjunction with the department, shall submit a report to the Legislature by April 1, 2012, that shall include a review of multiple sectors within commercial, industrial, and institutional users and that shall recommend water use efficiency standards for commercial, industrial, and institutional users among various sectors of water use. The report shall include, but not be limited to, the following:

(a) Appropriate metrics for evaluating commercial, industrial, and institutional water use.

(b) Evaluation of water demands for manufacturing processes, goods, and cooling.

(c) Evaluation of public infrastructure necessary for delivery of recycled water to the commercial, industrial, and institutional sectors.

(d) Evaluation of institutional and economic barriers to increased recycled water use within the commercial, industrial, and institutional sectors.

(e) Identification of technical feasibility and cost of the best management practices to achieve more efficient water use statewide in the commercial, industrial, and institutional sectors that is consistent with the public interest and reflects past investments in water use efficiency.

10608.44. Each state agency shall reduce water use on facilities it operates to support urban retail water suppliers in meeting the target identified in Section 10608.16.

CHAPTER 4. AGRICULTURAL WATER SUPPLIERS

10608.48. (a) On or before July 31, 2012, an agricultural water supplier shall implement efficient water management practices pursuant to subdivisions (b) and (c).

(b) Agricultural water suppliers shall implement all of the following critical efficient management practices:

(1) Measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) of Section 531.10 and to implement paragraph (2).

(2) Adopt a pricing structure for water customers based at least in part on quantity delivered.

(c) Agricultural water suppliers shall implement additional efficient management practices, including, but not limited to, practices to accomplish all of the following, if the measures are locally cost effective and technically feasible:

(1) Facilitate alternative land use for lands with exceptionally high water duties or whose irrigation contributes to significant problems, including drainage.

(2) Facilitate use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria, and does not harm crops or soils.

(3) Facilitate the financing of capital improvements for on-farm irrigation systems.

(4) Implement an incentive pricing structure that promotes one or more of the following goals:

(A) More efficient water use at the farm level.

(B) Conjunctive use of groundwater.

(C) Appropriate increase of groundwater recharge.

(D) Reduction in problem drainage.

(E) Improved management of environmental resources.

(F) Effective management of all water sources throughout the year by adjusting seasonal pricing structures based on current conditions.

(5) Expand line or pipe distribution systems, and construct regulatory reservoirs to increase distribution system flexibility and capacity, decrease maintenance, and reduce seepage.

(6) Increase flexibility in water ordering by, and delivery to, water customers within operational limits.

(7) Construct and operate supplier spill and tailwater recovery systems.

(8) Increase planned conjunctive use of surface water and groundwater within the supplier service area.

(9) Automate canal control structures.

(10) Facilitate or promote customer pump testing and evaluation.

(11) Designate a water conservation coordinator who will develop and implement the water management plan and prepare progress reports.

(12) Provide for the availability of water management services to water users. These services may include, but are not limited to, all of the following:

(A) On-farm irrigation and drainage system evaluations.

(B) Normal year and real-time irrigation scheduling and crop evapotranspiration information.

(C) Surface water, groundwater, and drainage water quantity and quality data.

(D) Agricultural water management educational programs and materials for farmers, staff, and the public.

(13) Evaluate the policies of agencies that provide the supplier with water to identify the potential for institutional changes to allow more flexible water deliveries and storage.

(14) Evaluate and improve the efficiencies of the supplier’s pumps.

(d) Agricultural water suppliers shall include in the agricultural water management plans required pursuant to Part 2.8 (commencing with Section 10800) a report on which efficient water management practices have been implemented and are planned to be implemented, an estimate of the water use efficiency improvements that have occurred since the last report, and an estimate of the water use efficiency improvements estimated to occur five and 10 years in the future. If an agricultural water supplier determines that an efficient water management practice is not locally cost effective or technically feasible, the supplier shall submit information documenting that determination.

(e) The data shall be reported using a standardized form developed pursuant to Section 10608.52.

(f) An agricultural water supplier may meet the requirements of subdivisions (d) and (e) by submitting to the department a water conservation plan submitted to the United States Bureau of Reclamation that meets the requirements described in Section 10828.

(g) On or before December 31, 2013, December 31, 2016, and December 31, 2021, the department, in consultation with the board, shall submit to the Legislature a report on the agricultural efficient water management practices that have been implemented and are planned to be implemented and an assessment of the manner in which the implementation of those efficient water management practices has affected and will affect agricultural operations, including estimated water use efficiency improvements, if any.

(h) The department may update the efficient water management practices required pursuant to subdivision (c), in consultation with the Agricultural Water Management Council, the United States Bureau of Reclamation, and the board. All efficient water management practices for agricultural water use pursuant to this chapter shall be adopted or revised by the department only after the department conducts public hearings to allow participation of the diverse geographical areas and interests of the state.

(i) (1) The department shall adopt regulations that provide for a range of options that agricultural water suppliers may use or implement to comply with the measurement requirement in paragraph (1) of subdivision (b).

(2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

CHAPTER 5. SUSTAINABLE WATER MANAGEMENT

10608.50. (a) The department, in consultation with the board, shall promote implementation of regional water resources management practices through increased incentives and removal of barriers consistent with state and federal law. Potential changes may include, but are not limited to, all of the following:

(1) Revisions to the requirements for urban and agricultural water management plans.

(2) Revisions to the requirements for integrated regional water management plans.

(3) Revisions to the eligibility for state water management grants and loans.

(4) Revisions to state or local permitting requirements that increase water supply opportunities, but do not weaken water quality protection under state and federal law.

(5) Increased funding for research, feasibility studies, and project construction.

(6) Expanding technical and educational support for local land use and water management agencies.

(b) No later than January 1, 2011, and updated as part of the California Water Plan, the department, in consultation with the board, and with public input, shall propose new statewide targets, or review and update existing statewide targets, for regional water resources management practices, including, but not limited to, recycled water, brackish groundwater desalination, and infiltration and direct use of urban stormwater runoff.

CHAPTER 6. STANDARDIZED DATA COLLECTION

10608.52. (a) The department, in consultation with the board, the California Bay-Delta Authority or its successor agency, the State Department of Public Health, and the Public Utilities Commission, shall develop a single standardized water use reporting form to meet the water use information needs of each agency, including the needs of urban water suppliers that elect to determine and report progress toward achieving targets on a regional basis as provided in subdivision (a) of Section 10608.28.

(b) At a minimum, the form shall be developed to accommodate information sufficient to assess an urban water supplier’s compliance with conservation targets pursuant to Section 10608.24 and an agricultural water supplier’s compliance with implementation of efficient water management practices pursuant to subdivision (a) of Section 10608.48. The form shall accommodate reporting by urban water suppliers on an individual or regional basis as provided in subdivision (a) of Section 10608.28.

Chapter 7. Funding Provisions

10608.56. (a) On and after July 1, 2016, an urban retail water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

(b) On and after July 1, 2013, an agricultural water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

(c) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for achieving the per capita reductions. The supplier may request grant or loan funds to achieve the per capita reductions to the extent the request is consistent with the eligibility requirements applicable to the water funds.

(d) Notwithstanding subdivision (b), the department shall determine that an agricultural water supplier is eligible for a water grant or loan even though the supplier is not implementing all of the efficient water management practices described in Section 10608.48, if the agricultural water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the efficient water management practices. The supplier may request grant or loan funds to implement the efficient water management practices to the extent the request is consistent with the eligibility requirements applicable to the water funds.

(e) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval documentation demonstrating that its entire service area qualifies as a disadvantaged community.

(f) The department shall not deny eligibility to an urban retail water supplier or agricultural water supplier in compliance with the requirements of this part and Part 2.8 (commencing with Section 10800), that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the requirements of this part or Part 2.8 (commencing with Section 10800).

10608.60. (a) It is the intent of the Legislature that funds made available by Section 75026 of the Public Resources Code should be expended, consistent with Division 43 (commencing with Section 75001) of the Public Resources Code and upon appropriation by the Legislature, for grants to implement this part. In the allocation of funding, it is the intent of the

Legislature that the department give consideration to disadvantaged communities to assist in implementing the requirements of this part.

(b) It is the intent of the Legislature that funds made available by Section 75041 of the Public Resources Code, should be expended, consistent with Division 43 (commencing with Section 75001) of the Public Resources Code and upon appropriation by the Legislature, for direct expenditures to implement this part.

Chapter 8. Quantifying Agricultural Water Use Efficiency

10608.64. The department, in consultation with the Agricultural Water Management Council, academic experts, and other stakeholders, shall develop a methodology for quantifying the efficiency of agricultural water use. Alternatives to be assessed shall include, but not be limited to, determination of efficiency levels based on crop type or irrigation system distribution uniformity. On or before December 31, 2011, the department shall report to the Legislature on a proposed methodology and a plan for implementation. The plan shall include the estimated implementation costs and the types of data needed to support the methodology. Nothing in this section authorizes the department to implement a methodology established pursuant to this section.

SEC. 2. Section 10631.5 of the Water Code is amended to read:

10631.5. (a) (1) Beginning January 1, 2009, the terms of, and eligibility for, a water management grant or loan made to an urban water supplier and awarded or administered by the department, state board, or California Bay-Delta Authority or its successor agency shall be conditioned on the implementation of the water demand management measures described in Section 10631, as determined by the department pursuant to subdivision (b).

(2) For the purposes of this section, water management grants and loans include funding for programs and projects for surface water or groundwater storage, recycling, desalination, water conservation, water supply reliability, and water supply augmentation. This section does not apply to water management projects funded by the federal American Recovery and Reinvestment Act of 2009 (Public Law 111-5).

(3) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if the urban water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the water demand management measures. The supplier may request grant or loan funds to implement the water demand management measures to the extent the request is consistent with the eligibility requirements applicable to the water management funds.

(4) (A) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if an urban water supplier submits to the department for approval documentation demonstrating that a water demand management measure is not locally cost effective. If the department determines that the documentation submitted by the urban water supplier fails to demonstrate that a water demand management measure is not locally cost effective, the department shall notify the urban water supplier and the agency administering the grant or loan program within 120 days that the documentation does not satisfy the requirements for an exemption, and include in that notification a detailed statement to support the determination.

(B) For purposes of this paragraph, "not locally cost effective" means that the present value of the local benefits of implementing a water demand management measure is less than the present value of the local costs of implementing that measure.

(b) (1) The department, in consultation with the state board and the California Bay-Delta Authority or its successor agency, and after soliciting public comment regarding eligibility requirements, shall develop eligibility requirements to implement the requirement of paragraph (1) of subdivision (a). In establishing these eligibility requirements, the department shall do both of the following:

(A) Consider the conservation measures described in the Memorandum of Understanding Regarding Urban Water Conservation in California, and alternative conservation approaches that provide equal or greater water savings.

(B) Recognize the different legal, technical, fiscal, and practical roles and responsibilities of wholesale water suppliers and retail water suppliers.

(2) (A) For the purposes of this section, the department shall determine whether an urban water supplier is implementing all of the water demand management measures described in Section 10631 based on either, or a combination, of the following:

(i) Compliance on an individual basis.

(ii) Compliance on a regional basis. Regional compliance shall require participation in a regional conservation program consisting of two or more urban water suppliers that achieves the level of conservation or water efficiency savings equivalent to the amount of conservation or savings achieved if each of the participating urban water suppliers implemented the water demand management measures. The urban water supplier administering the regional program shall provide participating urban water suppliers and the department with data to demonstrate that the regional program is consistent with this clause. The department shall review the data to determine whether the urban water suppliers in the regional program are meeting the eligibility requirements.

(B) The department may require additional information for any determination pursuant to this section.

(3) The department shall not deny eligibility to an urban water supplier in compliance with the requirements of this section that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the water demand management measures described in Section 10631.

(c) In establishing guidelines pursuant to the specific funding authorization for any water management grant or loan program subject to this section, the agency administering the grant or loan program shall include in the guidelines the eligibility requirements developed by the department pursuant to subdivision (b).

(d) Upon receipt of a water management grant or loan application by an agency administering a grant and loan program subject to this section, the agency shall request an eligibility determination from the department with respect to the requirements of this section. The department shall respond to the request within 60 days of the request.

(e) The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities. In addition, for urban water suppliers that are signatories to the Memorandum of Understanding Regarding Urban Water Conservation in California and submit biennial reports to the California Urban Water Conservation Council in accordance with the memorandum, the department may use these reports to assist in tracking the implementation of water demand management measures.

(f) This section shall remain in effect only until July 1, 2016, and as of that date is repealed, unless a later enacted statute, that is enacted before July 1, 2016, deletes or extends that date.

SEC. 3. Part 2.8 (commencing with Section 10800) of Division 6 of the Water Code is repealed.

SEC. 4. Part 2.8 (commencing with Section 10800) is added to Division 6 of the Water Code, to read:

PART 2.8. AGRICULTURAL WATER MANAGEMENT PLANNING

Chapter 1. General Declarations and Policy

10800. This part shall be known and may be cited as the Agricultural Water Management Planning Act.

10801. The Legislature finds and declares all of the following:

(a) The waters of the state are a limited and renewable resource.

(b) The California Constitution requires that water in the state be used in a reasonable and beneficial manner.

(c) Urban water districts are required to adopt water management plans.

(d) The conservation of agricultural water supplies is of great statewide concern.

(e) There is a great amount of reuse of delivered water, both inside and outside the water service areas.

(f) Significant noncrop beneficial uses are associated with agricultural water use, including streamflows and wildlife habitat.

(g) Significant opportunities exist in some areas, through improved irrigation water management, to conserve water or to reduce the quantity of highly saline or toxic drainage water.

(h) Changes in water management practices should be carefully planned and implemented to minimize adverse effects on other beneficial uses currently being served.

(i) Agricultural water suppliers that receive water from the federal Central Valley Project are required by federal law to prepare and implement water conservation plans.

(j) Agricultural water users applying for a permit to appropriate water from the board are required to prepare and implement water conservation plans.

10802. The Legislature finds and declares that all of the following are the policies of the state:

(a) The conservation of water shall be pursued actively to protect both the people of the state and the state's water resources.

(b) The conservation of agricultural water supplies shall be an important criterion in public decisions with regard to water.

(c) Agricultural water suppliers shall be required to prepare water management plans to achieve conservation of water.

Chapter 2. Definitions

10810. Unless the context otherwise requires, the definitions set forth in this chapter govern the construction of this part.

10811. "Agricultural water management plan" or "plan" means an agricultural water management plan prepared pursuant to this part.

10812. "Agricultural water supplier" has the same meaning as defined in Section 10608.12.

10813. "Customer" means a purchaser of water from a water supplier who uses water for agricultural purposes.

10814. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of that entity.

10815. "Public agency" means any city, county, city and county, special district, or other public entity.

10816. "Urban water supplier" has the same meaning as set forth in Section 10617.

10817. “Water conservation” means the efficient management of water resources for beneficial uses, preventing waste, or accomplishing additional benefits with the same amount of water.

CHAPTER 3. AGRICULTURAL WATER MANAGEMENT PLANS

Article 1. General Provisions

10820. (a) An agricultural water supplier shall prepare and adopt an agricultural water management plan in the manner set forth in this chapter on or before December 31, 2012, and shall update that plan on December 31, 2015, and on or before December 31 every five years thereafter.

(b) Every supplier that becomes an agricultural water supplier after December 31, 2012, shall prepare and adopt an agricultural water management plan within one year after the date it has become an agricultural water supplier.

(c) A water supplier that indirectly provides water to customers for agricultural purposes shall not prepare a plan pursuant to this part without the consent of each agricultural water supplier that directly provides that water to its customers.

10821. (a) An agricultural water supplier required to prepare a plan pursuant to this part shall notify each city or county within which the supplier provides water supplies that the agricultural water supplier will be preparing the plan or reviewing the plan and considering amendments or changes to the plan. The agricultural water supplier may consult with, and obtain comments from, each city or county that receives notice pursuant to this subdivision.

(b) The amendments to, or changes in, the plan shall be adopted and submitted in the manner set forth in Article 3 (commencing with Section 10840).

Article 2. Contents of Plans

10825. (a) It is the intent of the Legislature in enacting this part to allow levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

(b) This part does not require the implementation of water conservation programs or practices that are not locally cost effective.

10826. An agricultural water management plan shall be adopted in accordance with this chapter. The plan shall do all of the following:

(a) Describe the agricultural water supplier and the service area, including all of the following:

(1) Size of the service area.

(2) Location of the service area and its water management facilities.

(3) Terrain and soils.

(4) Climate.

(5) Operating rules and regulations.

(6) Water delivery measurements or calculations.

(7) Water rate schedules and billing.

(8) Water shortage allocation policies.

(b) Describe the quantity and quality of water resources of the agricultural water supplier, including all of the following:

(1) Surface water supply.

(2) Groundwater supply.

(3) Other water supplies.

(4) Source water quality monitoring practices.

(5) Water uses within the agricultural water supplier's service area, including all of the following:

(A) Agricultural.

(B) Environmental.

(C) Recreational.

(D) Municipal and industrial.

(E) Groundwater recharge.

(F) Transfers and exchanges.

(G) Other water uses.

(6) Drainage from the water supplier's service area.

(7) Water accounting, including all of the following:

(A) Quantifying the water supplier's water supplies.

(B) Tabulating water uses.

(C) Overall water budget.

(8) Water supply reliability.

(c) Include an analysis, based on available information, of the effect of climate change on future water supplies.

(d) Describe previous water management activities.

(e) Include in the plan the water use efficiency information required pursuant to Section 10608.48.

10827. Agricultural water suppliers that are members of the Agricultural Water Management Council, and that submit water management plans to that council in accordance with the "Memorandum of Understanding Regarding Efficient Water Management Practices By Agricultural Water Suppliers In California," dated January 1, 1999, may submit the water management plans identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of Section 10826.

10828. (a) Agricultural water suppliers that are required to submit water conservation plans to the United States Bureau of Reclamation pursuant to either the Central Valley Project Improvement Act (Public Law 102-575) or the Reclamation Reform Act of 1982, or both, may submit those water conservation plans to satisfy the requirements of Section 10826, if both of the following apply:

(1) The agricultural water supplier has adopted and submitted the water conservation plan to the United States Bureau of Reclamation within the previous four years.

(2) The United States Bureau of Reclamation has accepted the water conservation plan as adequate.

(b) This part does not require agricultural water suppliers that are required to submit water conservation plans to the United States Bureau of Reclamation pursuant to either the Central Valley Project Improvement Act (Public Law 102-575) or the Reclamation Reform Act of 1982, or both, to prepare and adopt water conservation plans according to a schedule that is different from that required by the United States Bureau of Reclamation.

10829. An agricultural water supplier may satisfy the requirements of this part by adopting an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) or by participation in areawide, regional, watershed, or basinwide water management planning if those plans meet or exceed the requirements of this part.

Article 3. Adoption and Implementation of Plans

10840. Every agricultural water supplier shall prepare its plan pursuant to Article 2 (commencing with Section 10825).

10841. Prior to adopting a plan, the agricultural water supplier shall make the proposed plan available for public inspection, and shall hold a public hearing on the plan. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned agricultural water supplier pursuant to Section 6066 of the Government Code. A privately owned agricultural water supplier shall provide an equivalent notice within its service area and shall provide a reasonably equivalent opportunity that would otherwise be afforded through a public hearing process for interested parties to provide input on the plan. After the hearing, the plan shall be adopted as prepared or as modified during or after the hearing.

10842. An agricultural water supplier shall implement the plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan, as determined by the governing body of the agricultural water supplier.

10843. (a) An agricultural water supplier shall submit to the entities identified in subdivision (b) a copy of its plan no later than 30 days after the adoption of the plan. Copies of amendments or changes to the plans shall be submitted to the entities identified in subdivision (b) within 30 days after the adoption of the amendments or changes.

(b) An agricultural water supplier shall submit a copy of its plan and amendments or changes to the plan to each of the following entities:

(1) The department.

(2) Any city, county, or city and county within which the agricultural water supplier provides water supplies.

(3) Any groundwater management entity within which jurisdiction the agricultural water supplier extracts or provides water supplies.

(4) Any urban water supplier within which jurisdiction the agricultural water supplier provides water supplies.

(5) Any city or county library within which jurisdiction the agricultural water supplier provides water supplies.

(6) The California State Library.

(7) Any local agency formation commission serving a county within which the agricultural water supplier provides water supplies.

10844. (a) Not later than 30 days after the date of adopting its plan, the agricultural water supplier shall make the plan available for public review on the agricultural water supplier's Internet Web site.

(b) An agricultural water supplier that does not have an Internet Web site shall submit to the department, not later than 30 days after the date of adopting its plan, a copy of the adopted plan in an electronic format. The department shall make the plan available for public review on the department's Internet Web site.

10845. (a) The department shall prepare and submit to the Legislature, on or before December 31, 2013, and thereafter in the years ending in six and years ending in one, a report summarizing the status of the plans adopted pursuant to this part.

(b) The report prepared by the department shall identify the outstanding elements of any plan adopted pursuant to this part. The report shall include an evaluation of the effectiveness of this part in promoting efficient agricultural water management practices and recommendations relating to proposed changes to this part, as appropriate.

(c) The department shall provide a copy of the report to each agricultural water supplier that has submitted its plan to the department. The department shall also prepare reports and provide data for any legislative hearing designed to consider the effectiveness of plans submitted pursuant to this part.

(d) This section does not authorize the department, in preparing the report, to approve, disapprove, or critique individual plans submitted pursuant to this part.

Chapter 4. Miscellaneous Provisions

10850. (a) Any action or proceeding to attack, review, set aside, void, or annul the acts or decisions of an agricultural water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(1) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(2) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 120 days after submitting the plan or amendments to the plan to entities in accordance with Section 10844 or the taking of that action.

(b) In an action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an agricultural water supplier, on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the agricultural water supplier has not proceeded in a manner required by law, or if the action by the agricultural water supplier is not supported by substantial evidence.

10851. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part. This part does not exempt projects for implementation of the plan or for expanded or additional water supplies from the California Environmental Quality Act.

10852. An agricultural water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

10853. No agricultural water supplier that provides water to less than 25,000 irrigated acres, excluding recycled water, shall be required to implement the requirements of this part or Part 2.55 (commencing with Section 10608) unless sufficient funding has specifically been provided to that water supplier for these purposes.

SEC. 5. This act shall take effect only if Senate Bill 1 and Senate Bill 6 of the 2009–10 Seventh Extraordinary Session of the Legislature are enacted and become effective.

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WEST BASIN MUNICIPAL WATER DISTRICT 2015 URBAN WATER MANAGEMENT PLAN

West Basin Municipal Water District

DRAFT
2015 Urban Water Management Plan

Prepared with support from:

ARCADIS Design & Consultancy for natural and built assets

May 2016

Message from the Board of Directors

Since its formation in 1947, West Basin has remained steadfast in its commitment to ensure a safe and reliable water supply for the region. Through the years, West Basin has grown and transformed, seeking innovative and viable solutions to meet the changing needs of its communities. West Basin continues to expand its efforts to meet the growing water demand while preserving our limited and precious water resources. Through our Water Reliability Program, including expanding recycling, maximizing conservation and exploring ocean water desalination, West Basin will continue to diversify its local water supplies to ensure a reliable supply of water for future generations.

We are proud to submit this 2015 Urban Water Management Plan to the California Department of Water Resources. The Plan reports all current and projected water supplies and demands within West Basin's service area, demonstrates water reliability for the next 25 years and provides a comprehensive overview of West Basin's various programs.

Board of Directors

Division 1 (Director Harold C. Williams): Cities of Carson, Palos Verdes Estates, Rancho Palos Verdes, Rolling Hills Estates, Rolling Hills and unincorporated Los Angeles County areas of San Pedro;

Division 2 (Director Gloria D. Gray): City of Inglewood, and unincorporated Los Angeles County areas of South Ladera Heights, Lennox, Athens, Howard and Ross-Sexton;

Division 3 (Director Carol W. Kwan): Cities of Hermosa Beach, Lomita, Manhattan Beach, Redondo Beach, a portion of Torrance and a portion of the unincorporated Los Angeles County area of Harbor-Gateway;

Division 4 (Director Scott Houston): Cities of Culver City, El Segundo, Malibu, and West Hollywood, and unincorporated Los Angeles County areas of Lennox, North Ladera Heights, Del Aire, Marina del Rey, Topanga, View Park and Windsor Hills; and

Division 5 (Director Donald L. Dear): Cities of Gardena, Hawthorne, Lawndale and the unincorporated Los Angeles County area of El Camino Village.

Mission Statement

"To provide a safe and reliable supply of high-quality water to the communities we serve."

Value Statement: "Through various programs and projects, West Basin ensures that its customer agencies have a safe and reliable supply of water to provide to the residents, businesses and industries within its service area."

Table of Contents

(Placeholder)

Executive Summary

Section 1 Plan Preparation

West Basin Municipal Water District (West Basin) was established in 1947 to help mitigate the over pumping of groundwater by providing imported water from the Metropolitan Water District of Southern California (Metropolitan) as replenishment supplies. Today, this imported water is also provided to supplement local supplies including groundwater, desalination, and recycled supplies developed by West Basin or by retailer agencies operating within West Basin's service area. In addition, a combination of recycled water and imported water is introduced into local aquifers through the West Coast Seawater Barrier to both protect the groundwater supplies from seawater contamination and replace or replenish, what is pumped.

This UWMP provides DWR with a detailed summary of present and future water resources and demands within West Basin's service area and assesses West Basin'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: an average year, a single-dry year, and multiple-dry years. West Basin's 2015 UWMP updates the 2010 UWMP in compliance with the requirements of the Act as amended in 2009.

Section 2 West Basin's Service Area

West Basin has an approximately 185-square mile service area and distributes wholesale potable water to 17 cities through investor-owned utilities, municipalities and one waterworks district in southwest Los Angeles County. In addition, West Basin supplies recycled water to over 400 customer meter connections for municipal, commercial and industrial use as well as for injection into the West Coast Basin Seawater Barrier to halt seawater intrusion and replenish the West Coast Groundwater Basin (WCGB) aquifer.

West Basin, governed by an elected five member Board of Directors, serves approximately 900,000 people. The Board of Directors guides the mission and policy of West Basin and each director serves a four-year term once elected. See Figure ES-1 for the service area boundaries.

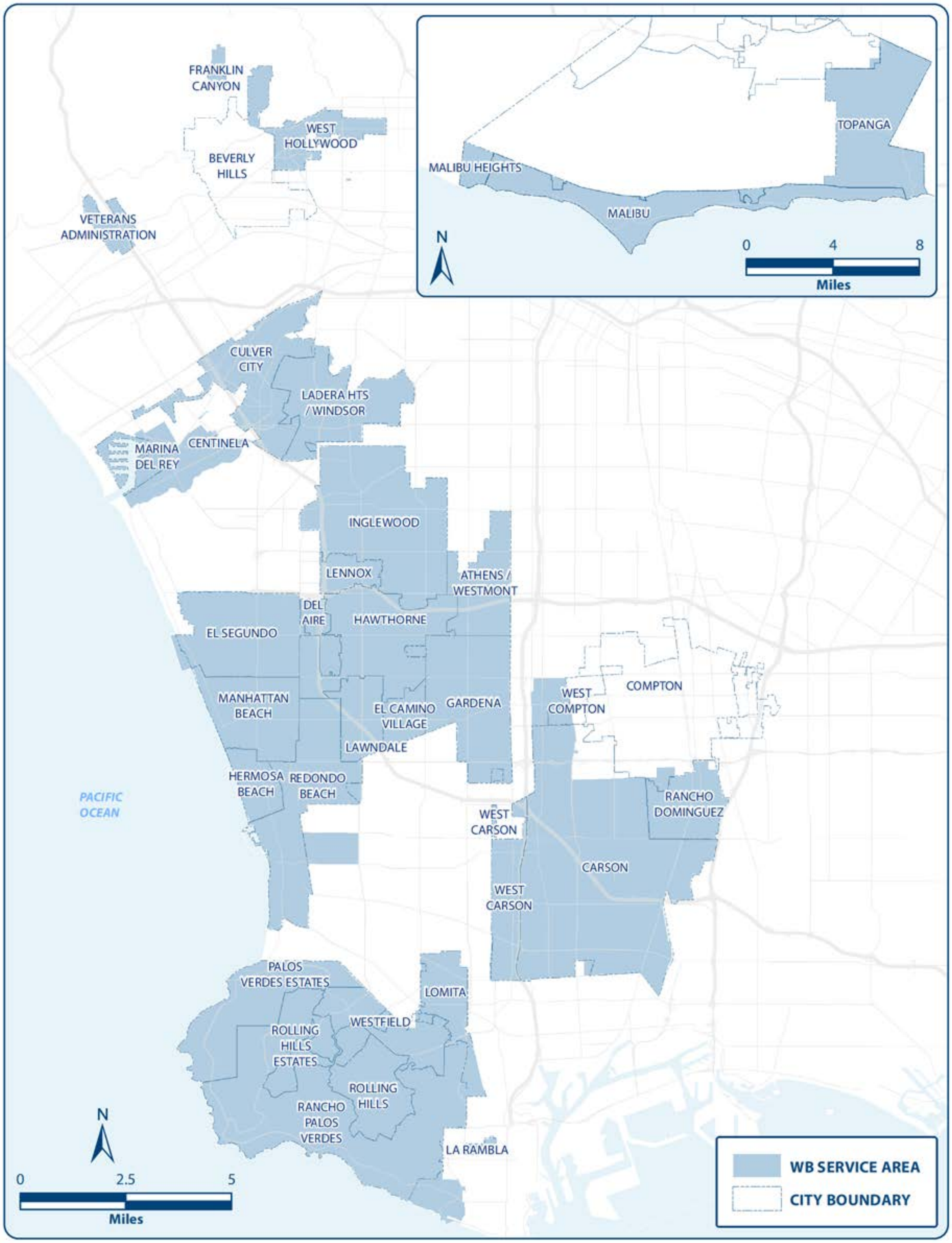


Figure ES-1: Service Area Boundaries

Section 3 Water Demands

While demand in the West Basin service area has historically increased due to increased population growth, recent years have shown a continued decrease in overall consumptive water use. This long term trend in more efficient water use has been due to the continuous efforts by West Basin and its retail water provider's customers to improve water use efficiency and water conservation. Annual reductions experienced in recent years have also been attributed to the economic downturn during the Great Recession which resulted in less consumption beginning in 2009 and aggressive extraordinary conservation program implementation due to drought conditions in 2008-11 and 2014-15. Wet weather and dry, hot weather also contributed to fluctuations in annual demands during this period.

Table ES-1 indicates that although West Basin's service area population is projected to increase, the overall baseline potable demand in acre-feet per year (AFY) is expected to decrease given further water use efficiency and recycled water program implementation.

Table ES-1: Projected West Basin Service Area Retail Demand (AFY)

Year	2020	2025	2030	2035	2040
Baseline Demand[1]	135,719	136,447	136,466	136,706	136,284
Planned Conservation[1]	32,280	35,190	37,928	40,255	42,773
Final Total Demand	**167,999**	**171,637**	**174,394**	**176,961**	**179,057**
Recycled Water Demand[2]	21,894	27,135	27,135	27,135	27,135
Final Potable Demand	**146,105**	**144,502**	**147,259**	**149,826**	**151,922**

[1] Projections based on Metropolitan Demand Forecasting Model
[2] Projections based on the Capital Improvement Plan, 2015, (excludes replenishment deliveries to the Barrier and deliveries outside service area)

In terms of per capita use (in gallons per capita day (gpcd)), the West Basin Regional Alliance baseline and targeted water use for 2020 is shown in table ES-2.

Table ES-2: Regional Alliance Revised 2020 Target (gpcd)

Calculation of Regional Compliance Daily per Capita Water Use						
West Basin 20x2020 Regional Alliance	2015 Service Area Population	Individual Targets 2015 (GPCD)[1]	Maximum 2020 Target (95% of 5-year base per capita use)	Calculated 2020 Target[1]	Individual Targets 2020 (GPCD)[2]	Selected Compliance Method
California Water Service - Hawthorne	44,504	97	94	142	94	3
El Segundo	17,000	462	435	411	411	1
Lomita	19,696	121	118	115	115	1
LACWWD #29	30,808	291	285	237	237	1
Manhattan Beach	35,454	162	164	144	144	1
Regional Alliance Total	147,462	**198**	-	-	**175**	-

NOTES: Cells highlighted in blue indicate if the maximum 2020 target or the calculated 2020 target was used to determine the 2020 target.

[1] Data from individual retailer SBx7-7 compliance tables.

[2] Lowest GPCD figure used to determine 2020 Individual Targets.

Section 4 Water Supplies

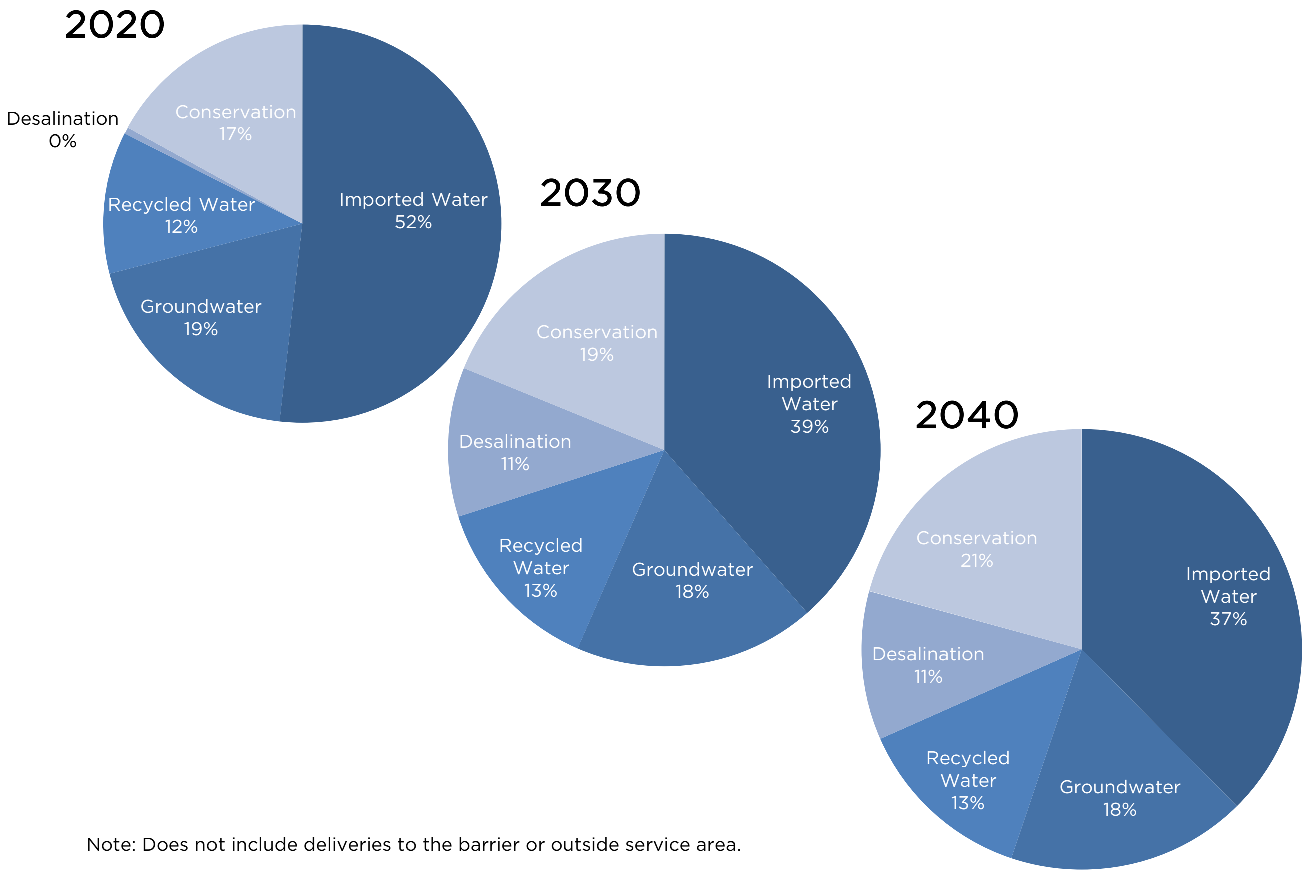
West Basin has been able to support the diversification of supplies available to its customer agencies by providing access to imported water supplies from Metropolitan as well as through the development of recycled water supplies. These supplies are served directly to its customer agencies and indirectly as the replenishment supplies necessary to maintain groundwater production. As Table ES-3 shows, West Basin is projecting to increase current recycled water supplies as well as invest in over 20,000 AFY of ocean water desalination supply.

Table ES-3 West Basin's Service Area Projected Retail Water Supplies (AFY)

Supplies	2020	2025	2030	2035	2040
Groundwater[1]	36,293	36,293	36,293	36,293	36,293
Imported Water[2]	98,426	77,654	77,673	77,913	77,491
Recycled Water[3]	21,894	27,135	27,135	27,135	27,135
Desalination[4]	1,000	22,500	22,500	22,500	22,500
Total	**157,613**	**163,582**	**163,601**	**163,841**	**163,419**
Conservation[5]	32,280	35,190	37,928	40,255	42,773
Total	**189,893**	**198,772**	**201,529**	**204,096**	**206,192**

[1] Groundwater production within West Basin service area only.
[2] Imported retail use only; does not include replenishment deliveries (i.e. Barrier).
[3] Recycled water does not include replenishment deliveries (i.e. Barrier) and deliveries outside the service area.
[4] Desalination includes both brackish and ocean water.
[5] Conservation consists of Active and Passive savings according to Metropolitan's projected estimates.

Coupled with additional conserved supply through water use efficiency programs, the overall imported water use is expected to be cut significantly by 2040 as shown in Figure ES-2.



Note: Does not include deliveries to the barrier or outside service area.

Figure ES-2: West Basin's Service Area Projected Retail Water Supplies

Section 5 Water Supply Reliability

West Basin's supply reliability can be greatly impacted by many factors including changes in the availability of supplies due to climatic or infrastructure changes as well as the ability to use those supplies more efficiently in both average and dry periods. West Basin has completed comprehensive water shortage contingency planning to provide reliability during these situations. West Basin's water shortage contingency analysis includes Metropolitan's Water Surplus and Drought Management Plan (WSDM) and Water Supply Allocation Plan (WSAP). The WSDM plan provides Metropolitan with a sequence of resource management actions to execute during surpluses and shortages to minimize the probability of severe shortages and reduce the possibility of extreme shortages and shortage allocations. The WSAP provides Metropolitan with a method for determining imported water allocations for its member agencies, including West Basin, relative to the amount of supplies available.

Metropolitan, in conjunction with its member agencies, conducts a resources planning process that that is based on diversification of the region's water supply portfolio and continued efficient water use. This integrated resource planning process has recognized that only through a mix of imported and member agency local supplies along with aggressive implementation of water conservation can the Metropolitan service area attain overall reliability of water supply. The need for diversification and drought resilient local supplies has only been reinforced in recent years as California and Metropolitan's service area has experienced two severe droughts resulting in water shortages to Metropolitan and cutbacks in supplies to its member agencies.

During this current drought, SWP Table A Allocations were at record lows with 5% of requested deliveries being met in 2014 and 20% of requested deliveries in 2015. With an unprecedented fourth consecutive dry year in 2015 the importance of Metropolitan's stored water to regional reliability is abundantly apparent. It is important for West Basin to analyze its reliability within the current context. Because of the challenges to imported water reliability and the likelihood of similar severe droughts and similar levels of Metropolitan cutbacks, West Basin will continue to develop hydrologically-independent local supplies like ocean water desalination and additional recycled water. These new drought resilient supplies will improve reliability for West Basin customers and by reducing the need for Metropolitan supplies will protect important storage reserves during future droughts to the benefit of the entire Metropolitan service area.

As part of its water shortage contingency planning, West Basin is moving forward with its plans to expand its water use efficiency programs, further develop recycled water, and add ocean water desalination supplies to improve its immediate, near- and long-term reliability of supplies. Additionally, West Basin's contingency planning includes a comprehensive plan to provide reliable water supplies under average, single-dry and multiple-dry year hydrologies for current and projected supplies. Under single-dry and multiple-dry year conditions West Basin plans to meet its annual increases in demand by purchasing imported water supplies. West Basin does not anticipate any shortages and will be able to provide reliable water supplies under both single dry year and multiple dry year conditions. Any shortfall in supplies will be met through imported water so long as Metropolitan manages its supply and demand balance through its WSDM and WSAP.

Maintaining imported water reliability will continue to remain a challenge however with the development of local resources as well as furthering existing conservation to meet the Water Conservation Act of 2009 targets, Metropolitan will be able to provide a supply buffer for its member agencies, including West Basin, to rely upon in times of drought and longer-term climatic changes.

Section 6 Water Quality

Compliance with water quality regulations is a regional water management priority and a shared responsibility. West Basin is responsible for the quality of the desalination and recycled water supplies generated at the C. Marvin Brewer Desalter (Desalter) and Edward C. Little Water Recycling Facility (ECLWRF) and its satellite facilities: Carson Water Recycling Facility, Chevron Nitrification Plant and Exxon-Mobil Nitrification Plant. Metropolitan is responsible for complying with State and Federal drinking water regulations on its imported potable water sold to West Basin. West Basin's retail customer agencies are responsible for ensuring compliance in their individual distribution systems and at the customer tap.

West Basin has a dedicated program and budget to engage in research projects that evaluate water quality, efficient operations and new pollution prevention technology and methods. Research projects close the environmental loop by addressing both final product water as well as source control issues to prevent pollution and the need for cleanup technology. West Basin leverages its research dollars by participating on the Boards of water industry research organizations such as WateReuse, American Water Works Associations, National Water Research Institute, Salinity Management Coalition as well as participating with academic institutions in water quality research.

Section 7 Water Use Efficiency

Since the severe drought of the early 1990s, West Basin has been a leader implementing aggressive water conservation programs to help limit water demand within its service area. West Basin's eight retail customer agencies also maintain conservation programs to reduce water waste and manage demand. West Basin programs have included a strong emphasis on education and the distribution of rebate incentives and plumbing retrofit hardware. The results of these programs, in conjunction with passive conservation measures such as modifications to city ordinances, have resulted in significant reductions in retail water use within West Basin's service area. By current estimates, demand management from all active and passive efforts within West Basin have saved over 9.7 billion gallons of imported water (30,000 AF) since 1991, which is equivalent to the average annual water use of almost 60,000 households.

In order to further increase conservation and meet the 2020 water use targets, in 2010 West Basin collaborated with its Regional Alliance agencies to develop a Water Use Efficiency Master Plan for each retail agency. In 2016, West Basin plans on updating its Water Use Efficiency Master Plan and will work closely with its retailers to develop and implement the existing and potential future water use efficiency measures.

Section 8 Water Rates & Charges

As a water wholesale agency, West Basin does not directly charge residential and other end-use customers for supplies. Instead, West Basin's customer agencies purchase water from West Basin and then combine it with other supplies if available to deliver to their retail customers at a variety of rates.

West Basin's current potable water rates are primarily based upon the cost of imported supplies purchased from Metropolitan. Imported water purchased by West Basin from Metropolitan carries not only the cost of acquiring, importing, treating and distributing the water throughout the region, but also these costs associated with maintaining Metropolitan reliability and "readiness to serve". The total West Basin rate structure must include the value-added costs associated with conservation, imported water and locally-produced recycled and desalinated groundwater supplies provided to customer agencies.

Section 9 Recycled Water

Since planning and constructing its recycled water system in the early 1990s, West Basin has become an industry leader in water reuse. West Basin's recycled water supply is sold to customers for non-potable applications such as landscape irrigation, commercial and industrial processes, and indirect potable uses through groundwater protection (seawater barrier) and replenishment. While serving to offset imported water supplies, recycled water use also results in less ocean discharge of lesser-treated wastewater into the Santa Monica Bay.

In calendar year 2015, West Basin delivered about 35,250 AF of recycled water to sites inside and outside its service area, saving enough potable water to serve roughly 70,500 households. Within West Basin's service area, municipal and industrial recycled water use totaled 16,707 AF and seawater barrier 12,403 AF, which is about 9 percent of West Basin's current total water supplies. It is projected that recycled water sales could represent 13 percent of total retail water supplies within the West Basin service area by 2040 and 17 percent of total retail water supplies within and deliveries made outside West Basin service area by 2040.

Section 10 Desalination

In mid-2014, West Basin decommissioned its Ocean Water Desalination Demonstration Facility that ran continuously starting in 2010. Prior to the Demonstration Facility, West Basin operated a Pilot Project for eight years. West Basin used the data acquired from the pilot project in the planning and development of the demonstration facility that produced 500,000 gallons of ocean water per day (gpd) to perform various research and testing activities. 100,000 gpd of intake water was treated to produce 50,000 gpd of water meeting drinking water standards. Although all drinking water standards were met, the permit required the treated water to be discharged back into the ocean.

Several research studies have been performed during the demonstration phase as well as after, which are described in greater detail in Section 10. With the findings being reviewed and a Program Master Plan (PMP) for the ocean water desalination project complete, the next step is to move forward with environmental permitting. The Environmental Impact Report (EIR) process has begun and will be complete by the end of 2016. Upon completion of the EIR West Basin anticipates permitting, financing, and constructing a full-scale facility by 2023.

Section 1 Plan Preparation

Water Code Sections 10610 through 10656 of the Urban Water Management Planning Act (Act) (included in Appendix A) 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 or Plan) 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 present and future water resources and demands within West Basin's service area and assesses West Basin'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. West Basin's 2015 UWMP updates the 2010 UWMP in compliance with the requirements of the Act as amended in 2009, and includes a discussion of:

- West Basin's Service Area
- Water Demands
- Water Supplies
- Water Supply Reliability
- Water Quality
- Water Use Efficiency
- Water Rates & Charges
- Recycled Water
- Desalination

1.1 Urban Water Management Planning Requirements

West Basin's 2015 UWMP revises the 2010 UWMP prepared by West Basin and incorporates changes enacted by legislation since 2010. The UWMP also incorporates water use efficiency efforts West Basin has implemented or is considering implementing pursuant to the Memorandum of Understanding Regarding Urban Water Conservation in California (California Urban Water Conservation Council, Memorandum of Understanding (MOU) Regarding Urban Water Conservation in California, September 1991). West Basin was one of the first agencies to become a signatory to the MOU in September 1991.

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. 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. 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. Wholesale water suppliers such as West Basin are required to include an assessment of present and proposed future measures, programs, and policies that would help its retail agencies achieve the 2020 goal.

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 West Basin's water utility. The most recent version of DWR's UWMP Checklist has been completed, which identifies the location of Act requirements in this UWMP and is included as Appendix B.

1.2 Regional Alliance UWMP

As a water wholesaler, West Basin is not required to provide SBx7-7 water use reduction targets. However, given its role as a regional water provider, West Basin has elected, in cooperation with a portion of its retail agencies, to use its 2015 UWMP as a regional alliance UWMP. According to DWR's 2015 UWMP guidelines, a regional demand reduction target can be developed by a regional alliance of multiple agencies to show compliance with SBx7-7. Although each of West Basin's retail agencies must prepare individual 2015 UWMPs with individual baseline and target calculations, West Basin's 2015 UWMP provides a regional target that will allow these retailers and West Basin to collaborate on the most effective programs to ensure that the targeted demand reductions can be met. Additional information is described in Section 3: Water Demands. The Plan and Agency identification are shown below in Tables 1-1 and 1-2.

Table 1-1: Plan Identification

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

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 Day that the Fiscal Year Begins (dd/mm)	
July 1 - June 30	
Units of Measure Used in UWMP	
Unit	AF

As a wholesale water provider, West Basin has informed its retail agencies of its water supplies in accordance with CWC 10631, as shown in Table 1-3.

Table 1-3: Water Supplier Information Exchange

Wholesale: Water Supplier Information Exchange (select one)	
☑	Supplier has informed more than 10 other water suppliers of water supplies available in accordance with CWC 10631. Completion of the table below is optional. If not completed include a list of the water suppliers that were informed.
Page 1-7	**Provide page number for location of the list.**
	Supplier has informed 10 or fewer other water suppliers of water supplies available in accordance with CWC 10631. **Complete the table below.**
Water Supplier Name	

1.3 Plan Adoption

Recognizing that close coordination among other relevant public agencies is key to the success of its UWMP, West Basin worked closely with many other entities, including representation from diverse social, cultural, and economic elements of the population within its service area, to develop and update this planning document.

This section provides the information required in Article 3 of the Water Code related to adoption and implementation of the UWMP. The UWMP checklist to confirm compliance with the Water Code is provided in Appendix B.

The draft 2015 UWMP was completed on May 6, 2016 and West Basin encouraged public interest and community involvement in this UWMP update through public hearings and inspection of the draft document on June 27, 2016. Public hearing notifications were published in local newspapers. A copy of the published Notice of Public Hearing is included in Appendix C. The hearing provided an opportunity for all residents and employees in the service area to learn and ask questions about their water supply in addition to West Basin's plans for providing a reliable, safe, high-quality water supply. Copies of the draft Plan were made available for public inspection at the West Basin headquarters and on West Basin's website.

Once finalized, the UWMP was adopted by a Resolution of the West Basin Board of Directors on June 27, 2016. A copy of the adopted resolution is provided in Appendix D. A change from the 2004 legislative session to the

2009 legislative session required West Basin to notify any city or county within its service area at least 60 days prior to the public hearing. As shown in Table 1-4, West Basin sent Letters of Notification to cities and counties within its service area on February 9, 2016 with notice that it was in the process of preparing an updated UWMP (Appendix E).

Table 1-4: Notification to Cities and Counties

Wholesale: Notification to Cities and Counties (select one)		
☑	Supplier has notified more than 10 cities or counties in accordance with CWC 10621 (b) and 10642. **Completion of the table below is not required. Provide a separate list of the cities and counties that were notified.**	
Page 1-7	Provide the page or location of this list in the UWMP.	
	Supplier has notified 10 or fewer cities or counties. **Complete the table below.**	
City Name	60 Day Notice	Notice of Public Hearing
County Name	60 Day Notice	Notice of Public Hearing

The UWMP is intended to serve as a general, flexible, and open-ended document that can be updated periodically to reflect changes in the region's water supply trends and conservation and water use efficiency policies. This UWMP, along with West Basin's other planning documents, will be used by West Basin staff to guide its service area's water use and management efforts through the year 2020, when the UWMP is required to be updated again.

1.4 Agency Coordination

West Basin hosted a stakeholder workshop during the draft UWMP public review period on March 30, 2016. At the workshop, West Basin provided its retail agencies with consistent information for use in the development of their 2015 UWMPs and also provided information upon request.

West Basin is a water wholesaler and is fully dependent on the Metropolitan Water District of Southern California (Metropolitan) for its imported water supplies. Therefore, West Basin provided comments and information to

Metropolitan during the preparation of its Draft Regional Urban Water Management Plan (RUWMP) which was distributed on February 2, 2016. West Basin staff also attended an information meeting for stakeholders and the public from within Metropolitan's service area on November 16, 2015.

Table 1-5 describes the coordination among West Basin, its retail agencies, the County of Los Angeles and Metropolitan during the review of the draft UWMP.

Table 1-5: Coordination with Appropriate Agencies

Agency	Participation in Regional Alliance	Received Copy of Draft	Attended Customer Workshop	Commented on Draft	Sent Notice of Intention to Adopt
County of Los Angeles - Water Resources Division		X			X
Metropolitan Water District of Southern California		X			X
California American Water		X			X
California Water Service	X*	X	X		X
City of El Segundo	X	X			X
City of Inglewood		X	X		X
City of Lomita	X	X			X
City of Manhattan Beach	X	X	X		X
Golden State Water Company		X	X		X
LA County Waterworks District #29	X	X			X
Water Replenishment District of Southern California		X			X

* Only the California Water Service – Hawthorne division is participating in the Regional Alliance.

1.5 UWMP Submittal

1.5.1 Review of 2010 UWMP Implementation

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

Comparison of 2010 Planned Water Conservation Programs with 2015 Actual Programs

As a wholesaler, West Basin did not include a specific implementation plan in its 2010 UWMP. As a signatory to the MOU regarding water use efficiency, West Basin is committed to implementing BMP-based water use efficiency programs. For West Basin's specific achievements in the area of conservation, please see Section 7 of this Plan.

Comparison of 2010 Projected Recycled Water Use with 2015 Actual Use

Recycled water use within West Basin's service area was about 13% lower than previously forecasted for 2015 in the 2010 UWMP, as illustrated in Table 9-2, due to the change in methodology used to forecast demands.

1.5.2 Adoption and Filing of 2015 UWMP

West Basin's Board of Directors approved the 2015 UWMP on June 27, 2016. By July 1, 2016, the Adopted 2015 West Basin UWMP was filed with DWR, California State Library, County of Los Angeles, and cities within West Basin's service area. West Basin will make the plan available for public review no later than 30 days after filing with DWR.

Section 2 West Basin's Service Area

West Basin has an approximately 185-square mile service area and distributes wholesale potable water to 17 cities through investor-owned utilities, municipalities and one waterworks district in southwest Los Angeles County. In addition, West Basin supplies recycled water to over 400 customer sites for municipal, commercial and industrial use as well as for injection into the West Coast Basin Seawater Barrier to halt seawater intrusion and replenish the West Coast Groundwater Basin (WCGB) aquifer.

Several of West Basin's customer agencies also pump groundwater supplies from the underlying WCGB to help meet their demands. California Water Service distributes a small amount of water from West Basin's C. Marvin Brewer Desalter, which treats brackish groundwater from the WCGB for drinking water use.

West Basin, governed by an elected five member Board of Directors, serves approximately 900,000 people. The Board of Directors guides the mission and policy of West Basin and each director serves a four-year term once elected. West Basin's service area delineated by Director Divisions is shown in Figure 2-1. Current directors and the cities and communities within their associated divisions are presented below:

Division 1 (Director Harold C. Williams): Cities of Carson, Palos Verdes Estates, Rancho Palos Verdes, Rolling Hills Estates, Rolling Hills and unincorporated Los Angeles County areas of San Pedro;

Division 2 (Director Gloria D. Gray): City of Inglewood, and unincorporated Los Angeles County areas of South Ladera Heights, Lennox, Athens, Howard and Ross-Sexton;

Division 3 (Director Carol W. Kwan): Cities of Hermosa Beach, Lomita, Manhattan Beach, Redondo Beach, a portion of Torrance and a portion of the unincorporated Los Angeles County area of Harbor-Gateway;

Division 4 (Director Scott Houston): Cities of Culver City, El Segundo, Malibu, and West Hollywood, and unincorporated Los Angeles County areas of Lennox, North Ladera Heights, Del Aire, Marina del Rey, Topanga, View Park and Windsor Hills; and

Division 5 (Director Donald L. Dear): Cities of Gardena, Hawthorne, Lawndale and the unincorporated Los Angeles County area of El Camino Village.

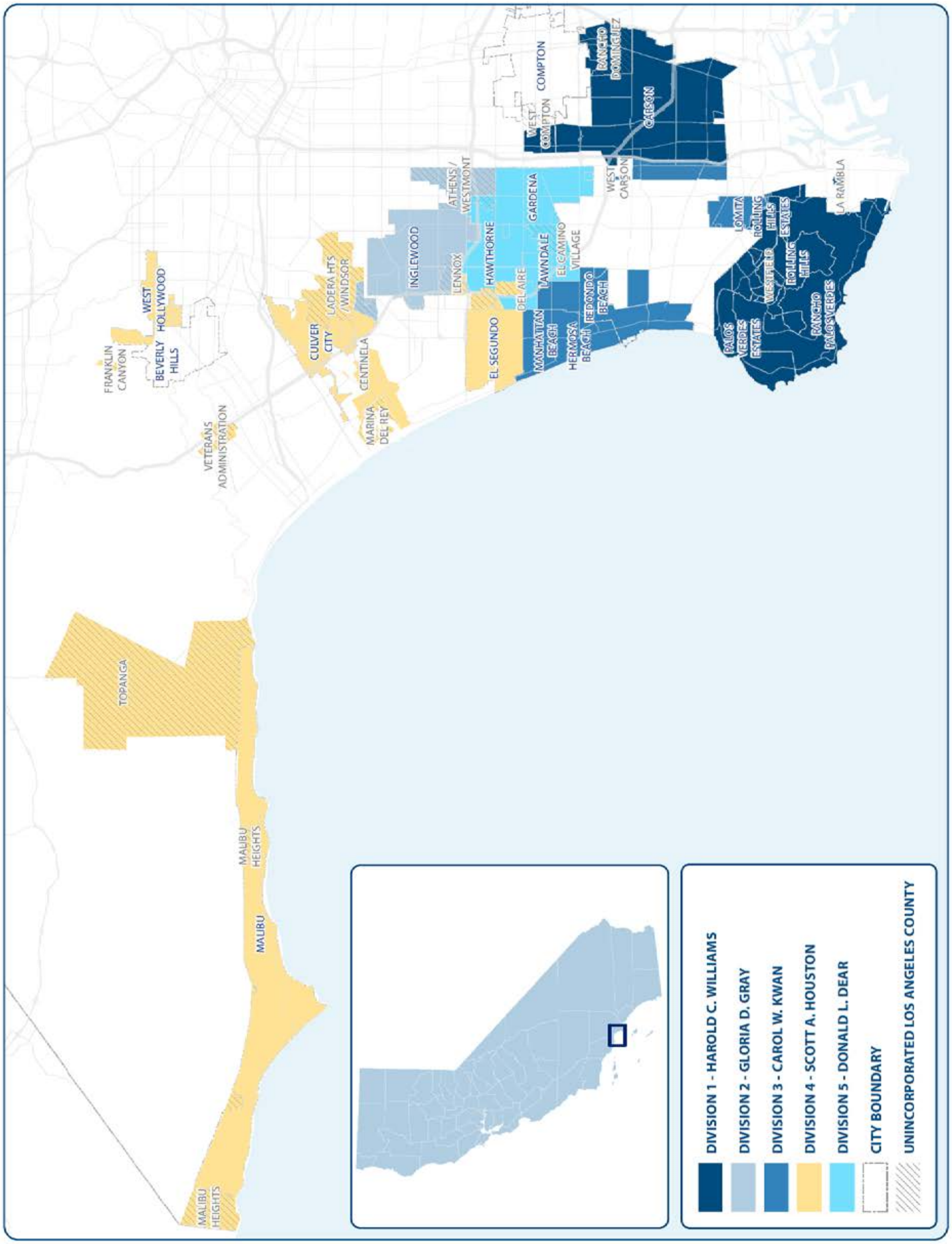


Figure 2-1: West Basin Service Area and Recycled Water Facilities

2.1 West Basin's Regional Relationship

West Basin was established by a vote of the people in 1947 to help mitigate the over pumping in the WCGB by providing the growing region with imported water. West Basin became a member agency of Metropolitan in 1947 to purchase, on a wholesale level, potable water imported from the Colorado River and the State Water Project to sell to local municipalities, investor-owned utilities and one waterworks district.

West Basin imports water to supplement local supplies. West Basin and its customer agencies operating within West Basin's service area develop local supplies including groundwater, brackish desalination, and recycled water. In addition, a blend of recycled and imported water is injected into the WCGB Barrier to protect the groundwater supplies from seawater contamination and replenish the aquifer. West Basin remains one of the largest member agencies of Metropolitan and representation on Metropolitan's Board is critical to making West Basin's customer agencies' voices on regional water issues heard. West Basin's Board of Directors appoints two representatives to serve on the 38-member Metropolitan Board of Directors.

In January 2008, the West Basin Board of Directors adopted a Strategic Business Plan that addresses water supply issues that plague southern California by focusing on producing new sources of local water, improving its environmentally-sound and innovative technologies, and emphasizing customer service and satisfaction.

With a goal to decrease its service area's dependence on imported water, West Basin has been implementing a Water Reliability Program that will expand its recycled water customer base, explore the feasibility of implementing ocean water desalination, and expand its water use efficiency programs and outreach. Through the Water Reliability Program, West Basin ensures that its customer agencies have a safe and reliable supply of water to provide to the residents, businesses and industries within its service area. Figure 2-2 illustrates the relationship West Basin has with Metropolitan and its customer agencies to provide the region with diversified and integrated water supplies.

Figure 2-2: West Basin Service Area Water Supplies

2.2 Climate Characteristics

West Basin's service area lies in the heart of southern California's coastal plain. It has a Mediterranean climate, characterized by warm, dry summers and wet, cool winters with moderate precipitation. The combination of mild climate and low rainfall attracts many new residents, creating a challenge for water agencies to accommodate increased water demands with drought affected water supplies.

Southern California is vulnerable to droughts. Historically, West Basin has experienced patterns of multiple dry years that have resulted in severe drought periods in 1977-78, 1989-92, 1999-2004, 2007-09, and most recently, 2012-15. Excessively dry conditions increase the local water demand; less precipitation is available to meet landscaping irrigation needs and often result in water shortages.

Los Angeles County's average daily temperatures range from 47 ˚F in December and January to 76 ˚F in August and September. The average annual precipitation is approximately 12 inches, although the region is subject to significant variations in monthly precipitation. The average evapotranspiration (ETo) is almost 43 inches per year which is three and a half times the annual average rainfall. This generates a high water demand for landscape irrigation for homes, commercial properties, parks, and golf courses. The potential for changes to the local climate and the resulting impacts are further discussed in Section 4: Water Supplies.

2.2.1 Climate Change Impacts

Climate change is having a profound impact on California water resources, as evidenced by changes in snowpack, sea level, and river flows. These changes are expected to continue in the future and more of our precipitation will likely fall as rain instead of snow. This potential change in weather patterns will exacerbate flood risks and add additional challenges for water supply reliability.

The mountain snowpack provides as much as a third of California's water supply by accumulating snow during our wet winters and releasing it slowly when we need it during our dry springs and summers. Warmer temperatures will cause what snow we do get to melt faster and earlier, making it more difficult to store and use. By the end of this century, the Sierra snowpack is projected to experience a 48-65 percent loss from the historical April 1st average. This loss of snowpack means less water will be available for Californians to use.

Climate change is also expected to result in more variable weather patterns throughout California. More variability can lead to longer and more severe droughts. In addition, the sea level will continue to rise threatening the sustainability of the Sacramento-San Joaquin Delta, the heart of the California water supply system and the source of water for 25 million Californians and millions of acres of prime farmland.

Just in the period between the previous and the current UWMP (from 2010 to 2015), climate change has been evident. Since the 2010 UWMP, 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 (MWD Draft 2015 UWMP, March 2016).

The uncertainty of continued climate impacts on the region stresses the need for flexibility in planning for future water supplies. West Basin has enacted its Drought Rationing Plan two times between 2010 and 2015 in response to MWD’s implementation of its Water Supply Allocation Plan. This scenario where water is likely to be rationed more often in the future will become a typical planning scenario for West Basin. The way in which people use water is becoming increasingly important for southern California and West Basin’s projected demands will be met through a variety of supplies, which are described in detail in Section 4.

2.3 Demographics

West Basin’s service area encompasses 185-square miles in southwest Los Angeles County and includes 17 cities and several unincorporated areas. Current projections show that population is expected to increase minimally through 2040 because many cities in the service area are older cities that anticipate reaching build-out in the near-term. This will result in nearly 900,000 people living in West Basin’s service area by 2040, representing an average growth of 0.4% annually.

The number of households in West Basin’s service area is expected to increase by 4.5% in the next 25 years from 294,293 in 2015 to 308,161 in 2040. The number of persons per household is also projected to increase slightly from 2.82 in 2015 to 2.87 in 2040. Urban employment in West Basin’s service area is expected to rise by 7.2% in the next 25 years.

Table 2-1 displays the current and projected population within West Basin’s service area over the next 25 years. This population projection shows a more conservative increase in population relative to the projection provided in West Basin’s 2010 UWMP.

Table 2-1: West Basin Service Area Current and Projected Population

Wholesale: Population - Current and Projected						
Population Served	2015	2020	2025	2030	2035	2040 *(opt)*
	813,000	823,886	837,059	864,523	878,666	891,617
NOTES: From Metropolitan Demand Projections						

Section 3 Water Demands

With an estimated 2015 population of approximately 813,000 as well as dense commercial and industrial areas, the total retail water demand within West Basin's service area in FY 2015 was 168,363 AFY. West Basin is responsible for meeting the direct retail demand from its retail agencies through imported (potable) and recycled water, as well as groundwater replenishment/seawater intrusion barrier demand from the Water Replenishment District of Southern California (WRD).

While demand in West Basin's service area has trended upward, recent years have shown a continued decrease in overall consumptive water use. This trend in more efficient water use can be seen in the decline in future demand projections between the 2005 and 2010 UWMPs. SBx7-7, the Water Conservation Act of 2009, called for an overall 20 percent decrease in per capita water use by the year 2020 and was incorporated into demand projections for the 2010 UWMP. The 2015 actual demand was within 1% of the demand predicted by the 2010 UWMP which reflected compliance with the 20% reduction in per capita demand by 2020 as required under SBx7-7.

This sustained decrease in water use over an extended period of time is due to the continuous efforts by West Basin and its retail water provider's customers to improve water use efficiency and water conservation. West Basin's 2015 UWMP provides a Regional Alliance target for per capita water use reductions by 2020 and an assessment of compliance with the interim target for 2015 that is in accordance with the State's Water Conservation Bill of 2009.

This section will explore in greater detail West Basin's historical, current and projected water demands. As a water wholesaler in the region, West Basin will also provide regional baseline and demand reduction targets for its retail agencies that are part of the Regional Alliance.

3.1 Historical Water Demands

Total water use within West Basin's service area includes retail demand for potable and recycled water, and groundwater replenishment. Retail demand is defined as a population's direct consumption, or all municipal (residential, firefighting, parks, etc.) and industrial uses. Replenishment demand is the supply needed to maintain the groundwater operations in the WCGB and is not used directly by residents, municipalities or industries.

3.1.1 Historical Retail Demand

Historically within the West Basin service area, increases in population have not always resulted in increases in overall water demand, as shown in Figure 3-1. In fact, within the last five years, demand decreased while population increased. On an annual basis demand can fluctuate because of other factors such as climate, economics/water rates and conservation programs during a severe and prolonged drought. West Basin, along with much of California, has experienced the effects of two major droughts within the last five years both resulting in the allocation of imported water supplies by Metropolitan. During those years when supplies are constrained or cutbacks from Metropolitan are experienced, water use efficiency is more aggressive, decreasing demand further during those periods.

During the period of FY 2010-2011 and FY 2015-2016, Metropolitan cut back its delivery of imported water by 15% which required more aggressive conservation activities and changes in consumer behavior. Once severe droughts and allocations of supplies have passed, demand will often begin to slightly rise again. Also, increased economic activity, such as was experienced in 2014 and 2015 after the Great Recession typically results in an increase in water use. While these patterns may represent a fluctuation in per capita usage, the fact that during this period total water demand has not risen along with the population indicates sustained increases in water use efficiency in average or wet years and when economic activity increases.

In FY 2015, the total potable retail water demand delivered to West Basin member agencies was approximately 139,253 acre-feet consisting of 105,569 acre-feet of imported water (treated), 690 acre-feet of local surface water and 32,994 acre-feet of groundwater. Overall, West Basin's per capita water demands will continue to decrease in the near future as water conservation efforts and commitment to water use efficiency continues in the region. Future demand growth is projected to remain flat through 2040. This is due to more limitations on new land development (e.g. cost, available space and environmental restrictions) and the continued commitment to water use efficiency in the region.

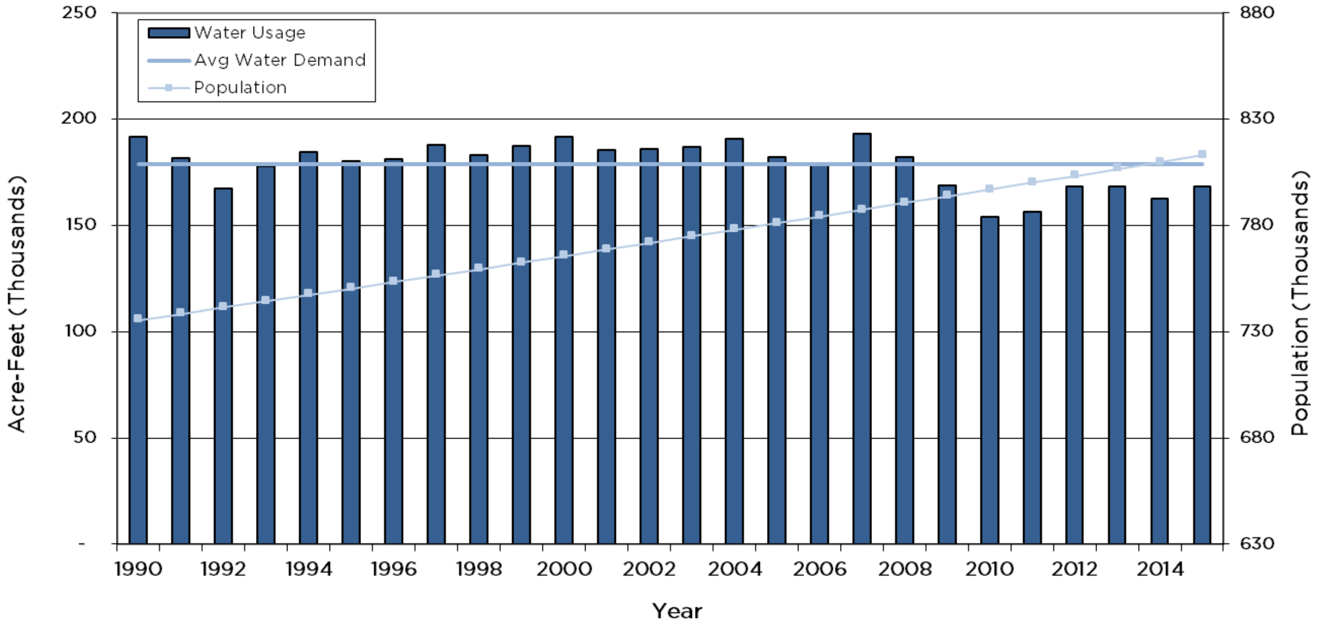


Figure 3-1: West Basin Service Area
Historical Retail Water Demand vs. Population

Table 3-1 shows the historical demand of each of West Basin's retail agencies as reported to West Basin by those agencies. Although some agencies have seen some dramatic shifts in water demand, there is an overall decrease of retail agency water demand by 7 percent in the last five years relative to the period 2006-2010.

This decreasing trend in groundwater pumping is primarily attributable to water quality and other operational issues that often drive retail agencies to purchase imported water rather than pump.

Table 3-1: Historical Water Demand per
West Basin Retail Agency (AF)

Retail Agency	2006-2010	2010-2015	% Change
California American Water Co.	3,896	3,420	-14%
California Water Service - Dominguez	38,402	37,836	-1%
California Water Service - Hawthorne	4,616	4,494	-3%
California Water Service - Hermosa/ Redondo	14,450	13,067	-11%
California Water Service - Palos Verdes	21,524	20,092	-7%
City of El Segundo	17,577	17,134	-3%
City of Inglewood	11,667	10,681	-9%
City of Lomita	2,460	2,313	-6%
City of Manhattan Beach	6,366	5,526	-15%
Golden State Water Company	34,184	30,276	-13%
LA County WaterWorks District #29	9,738	9,128	-7%
Total	164,880	153,967	-7%

3.1.2 Historical Replenishment Demand

The WCGB is reliant upon replenishment supplies to not only meet demand but also to maintain water quality levels. Groundwater in this basin is annually extracted beyond the natural level of replenishment, and as a result, seawater begins to intrude into the basin along the coast. The current method in preventing seawater from contaminating the groundwater basin is by injecting freshwater supplies into the West Coast and Dominguez Gap Seawater Intrusion Barriers (supplies shown in Table 3-2).

The Los Angeles County Department of Public Works (LACDPW) maintains these barriers and determines the quantity of injection necessary to maintain protective groundwater elevations along the barrier system to prevent seawater intrusion. WRD is responsible for purchasing the replenishment supply. As the wholesaler in the region, West Basin sells treated imported and recycled water to WRD to inject into the seawater barriers.

Table 3-2: Historical Groundwater Replenishment Supply (AF)

Historical Groundwater Replenishment Supply						
	2010	2011	2012	2013	2014	2015
West Coast Barrier						
Imported Water	8,145	9,914	3,879	8,738	5,826	3,582
Recycled Water	7,797	7,320	6,566	6,622	12,372	12,403
Sub-Total	**15,941**	**17,233**	**10,445**	**15,360**	**18,198**	**15,985**
Dominguez Gap Barrier						
Imported Water	4,909	3,620	4,625	2,582	3,460	3,772
Total	**20,851**	**20,853**	**15,070**	**17,942**	**21,658**	**19,757**

Source: WRD, monthly Production Reports

As Table 3-3 shows, WRD's demands from West Basin over the last five years average about 19,000 acre-feet annually. Water demands at the barriers usually do not shift dramatically due to the limited groundwater production allowed to each customer. The LACDPW determines the quantity of injection based on the need to maintain protective elevations along the barrier system.

Table 3-3: Average Historical Replenishment Demand (AFY)

Retailer	2006-2010	2011-2015
Water Replenishment District	19,011	18,959

3.2 Current and Projected Water Demands

This UWMP will provide some insight into West Basin's expected potable water demands for the next 25 years. Predicting water usage is an important element in planning future water supplies. In 2010, West Basin completed a Water Demand Forecasting Model that was used to project demand through 2035 for West Basin's entire service area. The water demand forecasting model projects demand outcomes based on various scenarios adjusted for the level of conservation activities anticipated, change in the cost of water, economic recovery and weather changes. For the 2015 UWMP, West Basin relied solely on Metropolitan's projections for total demand and water use efficiency.

Metropolitan Methodology for Forecasting Total Demand

Municipal & Industrial (M&I) Demand

According to its Draft 2015 UWMP "Metropolitan updates its retail M&I projection periodically based on the release of official regional demographic and economic projections.” As it relates to projections of retail M&I water demands for West Basin conducted by Metropolitan, data is used from the Southern California Association of Governments (SCAG) 2012 Regional Transportation Plan/Sustainable Community Strategy (April 2012).

The SCAG regional growth forecasts are the core assumptions that drive the estimating equations of the retail demand forecasting in Metropolitan’s Econometric Demand Model (MWD-EDM). SCAG’s projections undergo extensive local review, incorporate zoning information from city and county general plans, and are supported by Environmental Impact Reports.

Forecasting M&I Conservation

Within Metropolitan’s forecast of total demand for West Basin is an estimate of water conservation and a projection of retail demand after future water conservation is taken into account. This includes water conserved by Best Management Practices from active, code-based, and price-effect conservation. Active conservation levels are derived by calculating water savings from all active program device-based savings installed to date. Code-based conservation levels are derived by calculating water savings from devices covered by existing water conservation ordinances and plumbing codes, including the state Model Water Efficient Landscape Ordinance, with replacement and new construction rates driven by demographic growth consistent with SCAG land use and transportation plans used to derive retail demand. Price-effect conservation is derived by calculating water savings by retail customers attributable to the effect of changes in the real (inflation adjusted) price of water.

West Basin Methodology for Forecasting Replenishment and Recycled Water Demands

Replenishment/Barrier Water Demands

The LACDPW maintains these barriers and determines the quantity of injection necessary to maintain protective groundwater elevations along the barrier system to prevent seawater intrusion. WRD is responsible for purchasing the replenishment supply. As the wholesaler in the region, West Basin sells treated imported and recycled water to WRD to inject into the seawater barriers.

Recycled Water Demands

The recycled water demands are continuously analyzed and in 2009, West Basin completed a Capital Implementation Master Program (CIMP). The CIMP includes all of the planned projects for recycled water and desalination through 2030.

3.2.1 Demands for Potable and Raw Water

Table 3-4 provides the current total potable and raw water demand from West Basin's eight retail agencies, including the level of treatment and volume of water delivered. This does not include water needs that were met by conservation or groundwater pumped by individual agencies. West Basin does not sell raw water.

Table 3-4: Demands for Potable and Raw Water – Actual (AF)

Wholesale: Demands for Potable and Raw Water - Actual			
Use Type	2015 Actual		
	Additional Description	Level of Treatment When Delivered	Volume
Sales to other agencies	Imported Water	Drinking Water	105,569
Sales to other agencies	Desalination (Brackish GW)	Drinking Water	690
		TOTAL	**106,259**

West Basin's potable and raw water retail demand projections through 2040 are shown in Table 3-5. These demand projections include water use for residential, commercial, industrial, and other uses within West Basin's service area. Retail demands are served through West Basin's retail agencies. Additional information about demand use will be included within the retail agency UWMPs.

Table 3-5: Wholesale: Demands for Potable and Raw Water – Projected (AF)

Wholesale: Demands for Potable and Raw Water - Projected						
Use Type	Additional Description	Projected Water Use *Report To the Extent that Records are Available*				
		2020	2025	2030	2035	2040
Sales to other agencies	Imported Water	98,426	77,654	77,673	77,913	77,491
Sales to other agencies	Desalination (Brackish GW)	1,000	1,000	1,000	1,000	1,000
Sales to other agencies	Desalination (Ocean)	0	21,500	21,500	21,500	21,500
	TOTAL	**99,426**	**100,154**	**100,173**	**100,413**	**99,991**

3.2.2 Additional Water Uses and Losses

A detailed calculation of water system losses, including unbilled authorized consumption (e.g. hydrant flushing, fire-fighting, and blow-off water from well start-ups), real losses (leakage), and apparent losses (unauthorized consumption and metering inaccuracies) is included in each of West Basin's retail agencies' UWMP. As West Basin does not own any distribution pipeline of potable water it is not subject to this requirement.

3.2.3 Total Demand Projections

Total demand for all potable, raw and recycled water is listed in Table 3-6. Recycled water demands are described in further detail in Section 9.

Table 3-6: Total Water Demands (AF)

Wholesale: Total Water Demands						
	2015	2020	2025	2030	2035	2040
Potable and Raw Water *From Tables 3-4 and 3-5*	106,259	99,426	100,154	100,173	100,413	99,991
Recycled Water Demand *From Table 9-4**	29,110	38,894	44,135	44,135	44,135	44,135
TOTAL WATER DEMAND	**135,369**	**138,320**	**144,289**	**144,308**	**144,548**	**144,126**

* Only includes recycled water deliveries within the West Basin service area and deliveries to the Barrier.

3.3 Regional Alliance Baseline and Target Demands

The Water Conservation Bill of 2009 (SBx7-7) requires individual retail water suppliers to set water conservation targets for 2015 and 2020 to support an overall state goal of reducing urban potable per capita water use by 20 percent by 2020. Individual supplier conservation targets must be determined using one of four methods with a baseline consumption that is calculated using the specific guidelines described in DWR's *2015 Urban Water Management Plans Guidebook for Urban Water Suppliers* (DWR Guidebook).

As a regional water supply wholesale agency, West Basin is not required to report baseline or target demands in keeping with the Water Conservation Act of 2009. However, West Basin has elected to use its 2015 UWMP as the reporting mechanism for a Regional Alliance formed by some of its retail agencies to meet the per capita baseline and target reporting requirements of the Water Conservation Bill of 2009. Since not all of West Basin's retail agencies elected to participate in the Regional Alliance, the overall historical and projected demand within West Basin's service area described in Section 3.1 and 3.2 will be greater than the Regional Alliance per capita baseline described in this Section 3.3.

The Investor-owned companies (California American Water Company, California Water Service, and Golden State Water Company) decided not to participate in the Regional Alliance because much of their jurisdictions are outside of West Basin's service area and they prefer to comply individually. The City of Inglewood also chose to comply themselves.

3.3.1 Regional Alliance Membership

The West Basin Regional Alliance members include the following West Basin retail agencies:

- California Water Service (Hawthorne region)
- City of El Segundo
- City of Lomita
- City of Manhattan Beach
- Los Angeles County Waterworks District #29

As a Regional Alliance, these agencies worked with West Basin to establish a regional baseline of water use and conservation targets for 2015 and 2020. They will also collaborate on implementing the recycled water and conservation programs and projects that will be required to meet these targets.

3.3.2 Regional Alliance Base Use

The Regional Alliance members used the step by step process described in the DWR Guidebook to determine the base daily water use for each member. The process and resulting calculations are described in this section.

Step 1: Determine Supplier Base Period Year Ranges

Table 3-7 provides the recycled water deliveries in 2008 for each member of the Regional Alliance. The resulting analysis shows that the city of El Segundo meets over 10 percent of their demand through recycled water deliveries. Therefore, the City of El Segundo is allowed to use a range up to 15 years from which to calculate their baseline water use, however, they have chosen to use a 10 year range. The remaining members of the Regional Alliance delivered less than 10 percent of their supply with recycled water and can only use a 10 year range to calculate their baseline use.

Table 3-7: Regional Alliance Recycled Water Deliveries (2008)

Agency	Total Water Deliveries	Total Recycled Water Deliveries	Percentage of Recycled Water Deliveries
California Water Service - Hawthorne	4,685	103	2.2%
El Segundo	16,950	7,865	46.4%
Lomita	2,501	0	0.0%
LACWWD #29	10,388	0	0.0%
Manhattan Beach	6,781	272	4.0%
Regional Alliance Total	**41,305**	**8,240**	**19.9%**

Table 3-8 shows the resulting 10- to 15-year base period and Table 3-9 shows the five-year base period that will be used for each Regional Alliance member. The base periods were selected by determining the most appropriate set of years to represent each Regional Alliance members' baseline use given the methodologies available through DWR.

Table 3-8: Regional Alliance 10- to 15-Year Base Periods

West Basin 20x2020 Regional Alliance	Start Year	End Year	Total Years
California Water Service - Hawthorne	1997	2006	10
El Segundo	2001	2010	10
Lomita	1995	2004	10
LACWWD #29	1999	2008	10
Manhattan Beach	1995	2004	10

Table 3-9: Regional Alliance 5-Year Base Period

Regional Alliance 5-Year Base Periods		
West Basin 20x2020 Regional Alliance	Start Year	End Year
California Water Service - Hawthorne	2003	2007
El Segundo	2003	2007
Lomita	2003	2007
LACWWD #29	2004	2008
Manhattan Beach	2003	2007

Step 2: Estimate Distribution System Area and Population

The composition of the Regional Alliance member distribution system boundaries does not match the West Basin service area. Therefore, the distribution service area descriptions and maps for each member of the Regional Alliance are provided as part of the individual agency 2015 UWMPs and not within West Basin's 2015 UWMP.

The service area population for each agency was determined independently as part of the demand forecasting model development. The service area populations used came from the SCAG and Department of Finance projections based upon 2010 census data and predicted economic growth. The population for each Regional Alliance member for each of the base years is provided in Table 3-10 through Table 3-15.

Step 3: Calculate Gross Water Use

Gross water use for each year within the base year range was provided by each agency. The gross water use for each Alliance member was calculated using DWR's Methodology 1 and is described in more detail within each of the

Alliance member 2015 UWMPs.

Step 4: Calculate Base Per Capita Demand

An annual per capita use was determined by dividing the actual potable water produced for each Regional Alliance member by the corresponding service area populations that were determined in Step 3 for each of the base year ranges. A final base gross water use is calculated by taking the average per capita use for all years within the selected 10-year range (as shown in Table 3-10). These calculations are shown in Table 3-10 through Table 3-15.

The five-year base range was used to calculate average gross water use more recently to determine if any Regional Alliance members are already below the DWR 100 gpcd threshold. Those members with use lower than 100 gpcd would not be required to meet any further demand reductions.

Table 3-10: California Water Service (Hawthorne)
Base Daily Per Capita Water Use

California Water Service (Hawthorne) Base Daily per Capita Water Use				
Baseline Year		Service Area Population	Annual Gross Water Use (AFY)	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1997	42,980	4,898	102
Year 2	1998	42,964	4,772	99
Year 3	1999	43,012	4,623	96
Year 4	2000	43,088	4,765	99
Year 5	2001	42,735	4,737	99
Year 6	2002	42,717	4,739	99
Year 7	2003	42,710	4,817	101
Year 8	2004	42,807	4,936	103
Year 9	2005	42,866	4,804	100
Year 10	2006	42,884	4,665	97
10-15 Year Average Baseline GPCD				**99**
5 Year Baseline GPCD				
Baseline Year		Service Area Population	Annual Gross Water Use (AFY)	Daily Per Capita Water Use (GPCD)
Year 1	2003	42,710	4,817	101
Year 2	2004	42,807	4,936	103
Year 3	2005	42,866	4,804	100
Year 4	2006	42,884	4,665	97
Year 5	2007	42,919	4,613	96
5 Year Average Baseline GPCD				**99**

Table 3-11: City of El Segundo
Base Daily Per Capita Water Use

City of El Segundo Base Daily per Capita Water Use				
Baseline Year		Service Area Population	Annual Gross Water Use (AFY)	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	2001	16,200	14,528	801
Year 2	2002	16,363	9,331	509
Year 3	2003	16,506	8,543	462
Year 4	2004	16,612	8,320	447
Year 5	2005	16,649	8,492	455
Year 6	2006	16,600	8,363	450
Year 7	2007	16,599	8,861	477
Year 8	2008	16,547	9,085	490
Year 9	2009	16,581	8,795	474
Year 10	2010	16,560	10,632	573
10-15 Year Average Baseline GPCD				**514**
5 Year Baseline GPCD				
Baseline Year		Service Area Population	Annual Gross Water Use (AFY)	Daily Per Capita Water Use (GPCD)
Year 1	2003	16,506	8,543	462
Year 2	2004	16,612	8,320	447
Year 3	2005	16,649	8,492	455
Year 4	2006	16,600	8,363	450
Year 5	2007	16,599	8,861	477
5 Year Average Baseline GPCD				**458**

Table 3-12: City of Lomita Base Daily Per Capita Water Use

City of Lomita Base Daily per Capita Water Use				
Baseline Year		Service Area Population	Annual Gross Water Use (AFY)	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1995	18,514	2,555	123
Year 2	1996	18,487	2,649	128
Year 3	1997	18,524	2,376	115
Year 4	1998	18,634	2,588	124
Year 5	1999	18,753	2,741	130
Year 6	2000	18,985	2,768	130
Year 7	2001	19,176	2,681	125
Year 8	2002	19,368	2,835	131
Year 9	2003	19,499	2,822	129
Year 10	2004	19,580	2,791	127
10-15 Year Average Baseline GPCD				126
5 Year Baseline GPCD				
Baseline Year		Service Area Population	Annual Gross Water Use (AFY)	Daily Per Capita Water Use (GPCD)
Year 1	2003	19,499	2,822	129
Year 2	2004	19,580	2,791	127
Year 3	2005	19,565	2,644	121
Year 4	2006	19,433	2,596	119
Year 5	2007	19,336	2,681	124
5 Year Average Baseline GPCD				124

Table 3-14: Los Angeles County Waterworks District #29 Base Daily Per Capita Water Use

Los Angeles County Waterworks District #29 Base Daily per Capita Water Use				
Baseline Year		**Service Area Population**	**Annual Gross Water Use (AFY)**	**Daily Per Capita Water Use (GPCD)**
10 to 15 Year Baseline GPCD				
Year 1	1999	29,753	9,552	287
Year 2	2000	29,984	9,804	292
Year 3	2001	30,175	9,326	276
Year 4	2002	30,300	10,403	307
Year 5	2003	30,322	10,307	303
Year 6	2004	30,737	10,714	311
Year 7	2005	30,900	9,817	284
Year 8	2006	31,053	10,241	294
Year 9	2007	31,141	10,969	314
Year 10	2008	31,204	10,388	297
10-15 Year Average Baseline GPCD				**297**
5 Year Baseline GPCD				
Baseline Year		**Service Area Population**	**Annual Gross Water Use (AFY)**	**Daily Per Capita Water Use (GPCD)**
Year 1	2004	30,737	10,714	311
Year 2	2005	30,900	9,817	284
Year 3	2006	31,053	10,241	294
Year 4	2007	31,141	10,969	314
Year 5	2008	31,204	10,388	297
5 Year Average Baseline GPCD				**300**

Table 3-13: City of Manhattan Beach Base Daily Per Capita Water Use

City of Manhattan Beach Base Daily per Capita Water Use				
Baseline Year		Service Area Population	Annual Gross Water Use (AFY)	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1995	32,445	6,390	176
Year 2	1996	32,721	6,674	182
Year 3	1997	32,998	6,897	187
Year 4	1998	33,279	6,598	177
Year 5	1999	33,558	7,011	187
Year 6	2000	33,833	6,807	180
Year 7	2001	33,972	6,641	175
Year 8	2002	34,105	6,817	178
Year 9	2003	34,241	6,740	176
Year 10	2004	34,374	6,907	179
10-15 Year Average Baseline GPCD				180
5 Year Baseline GPCD				
Baseline Year		Service Area Population	Annual Gross Water Use (AFY)	Daily Per Capita Water Use (GPCD)
Year 1	2003	34,241	6,740	176
Year 2	2004	34,374	6,907	179
Year 3	2005	34,507	6,666	172
Year 4	2006	34,640	6,809	175
Year 5	2007	34,773	6,303	162
5 Year Average Baseline GPCD				173

Table 3-15: Combined West Basin Regional Alliance-Base Daily Per Capita Water Use

Combined West Basin Regional Alliance Base Daily per Capita Water Use	
Baseline Period	Regional Average Baseline (GPCD)
10-15 year	211
5 Year	204

3.3.3 Regional Alliance Water Use Targets

The Regional Alliance water use targets were calculated by first determining which of the four allowable target calculation methods would be used for each member of the Regional Alliance. These methods include the following:

- Method 1: 80 percent of ten-year baseline per capita use
- Method 2: Applying performance standards

- Method 3: 95 percent of the DWR South Coast Region target of 149
- Method 4: Applying savings by water sector

These selected methods were applied to the 10-year base per capita water use calculated in Tables 3-10 through 3-15 to determine a target per capita water use level for 2020. Once these targets were determined, they were confirmed by comparing them against DWR's maximum allowable target. The maximum allowable target is equivalent to 95 percent of each Alliance member's five-year base per capita use calculated in Tables 3-10 through Table 3-15.

If the five-year base per capita use was less than 100 gpcd, then there is no maximum target for that supplier since it would be considered by DWR to be sufficiently efficient in water use. If the 2020 calculated target is greater than the maximum allowable target, then the maximum allowable target must be used instead of the calculated 10-year base targets.

Table 3-16 provides the final per capita targets for each member of the Regional Alliance as well as the overall targets for the combined Regional Alliance. Cells highlighted in blue indicate whether the calculated or maximum allowable target was used to determine the final 2020 target. Once the final 2020 water use target has been calculated, then an interim target is created by calculating the median between the 10-year base per capita use and the final 2020 target.

Table 3-16: Regional Alliance 2015 Interim and 2020 Targets

Calculation of Regional Compliance Daily per Capita Water Use						
West Basin 20x2020 Regional Alliance	2015 Service Area Population	Individual Targets 2015 (GPCD)[1]	Maximum 2020 Target (95% of 5-year base per capita use)	Calculated 2020 Target[1]	Individual Targets 2020 (GPCD)[2]	Selected Compliance Method
California Water Service - Hawthorne	44,504	97	94	142	94	3
El Segundo	17,000	462	435	411	411	1
Lomita	19,696	121	118	115	115	1
LACWWD #29	30,808	291	285	237	237	1
Manhattan Beach	35,454	162	164	144	144	1
Regional Alliance Total	147,462	**198**	-	-	**175**	-

NOTES: Cells highlighted in blue indicate if the maximum 2020 target or the calculated 2020 target was used to determine the 2020 target.
[1] Data from individual retailer SBx7-7 compliance tables.
[2] Lowest GPCD figure used to determine 2020 Individual Targets.

Table 3-17 represents a comparison of the 2015, 5-year base, 10-year base and 2020 target water use for each Regional Alliance member. Table 3-18 shows that the region has achieved the targeted reduction for 2015.

Table 3-17: Regional Alliance Base and Target Use Summary

Regional Alliance Base and Target Use Summary					
2015 Service Area Population	Baseline GPCD (5 year)	Baseline GPCD (10-15 year)	Actual 2015 GPCD	2015 Target GPCD	2020 Target GPCD
147,462	204	211	157	198	175

Table 3-18: 2015 Regional Alliance Compliance

2015 Regional Alliance Compliance		
Actual 2015 GPCD	2015 Interim Target GPCD	Did Supplier Achieve Targeted Reduction for 2015? Y/N
157	198	Yes

3.4 Water Use Reduction Plan

In order to meet the 2020 use targets calculated in Table 3-16, West Basin has collaborated with its Regional Alliance agencies to develop individual Water Use Efficiency Master Plans. These plans were completed in May 2011. Table 3-19 identifies several key programs already identified for implementation that will help the Regional Alliance achieve or even go beyond the required water use targets. These projects have been implemented during the period of 2010-2015 and some of them will continue beyond 2015.

Table 3-19: West Basin and Retailer Program Participation

Programs	California Water Service - Hawthorne	City of El Segundo	City of Lomita	Los Angeles County WaterWorks District #29	City of Manhattan Beach	West Basin
Metropolitan						
Residential Rebate Program	X	X	X	X	X	X
Save A Buck Rebate Program	X	X	X	X	X	X
West Basin						
High-Efficiency Toilet (HET) Distribution Events	X	X	X	X	X	X
Green Living for Apartments and Condos (Direct HET Installations)	X	X	X	X	X	X
Ocean Friendly Landscape Program	X	X	X	X	X	X
Complete Restroom Retrofit Program	X	X	X	X	X	X
Recirc & Save Program	X	X	X	X	X	X
Cash for Kitchens	X	X	X	X	X	X
Education Programs	X	X	X	X	X	X
Water & Energy Efficiency in the Motel/Hotel and Schools Sectors	X	X	X	X	X	X
Greywater Workshops	X	X	X	X	X	X
Rain Barrel Distribution Events	X	X	X	X	X	X
Regional Landscape Water Efficiency Program (Turf Removal)	X	X	X	X	X	X
Landscape Irrigation Efficiency Program (LIEP)	X	X	X	X	X	X
Car Wash Coupon Program	X	X	X	X	X	X
Weather-Based Irrigation Controller (WBIC) Events	X	X	X	X	X	X
Home Depot Plant Sales	X	X	X	X	X	X
West Basin Programs (Funding Pending)						
High-Efficiency Nozzle Program	X	X	X	X	X	X
Water Star Schools Pilot Program	X	X	X	X	X	X
Greywater Workshops	X	X	X	X	X	X
Other Water Retailer						
Turf Removal Program	X	-	-	-	-	N/A
HET Rebates (CII)	-	-	-	X	-	N/A
Landscape Surveys	X	-	-	X	-	N/A
Education Programs	X	X	X	X	X	N/A
Landscape Incentives	X	-	-	X	-	N/A

Section 4 Water Supplies

It is West Basin's mission to ensure a safe, adequate and reliable supply of water for the communities it serves. Continued challenges to imported water reliability resulting from shifting climate patterns that are resulting in more frequent droughts, combined with increasing regulatory restrictions on State Water Project (SWP) exports through the Sacramento -San Joaquin Delta, have continued to focus West Basin to further diversify its supply portfolio. West Basin's diversification strategy consists of expanded recycled water production and distribution, ocean water desalination supply development, and increased conservation savings through its Water Reliability Program.

This section provides an overview of the current and future water supplies needed to meet the expected demands and enhance reliability within the West Basin service area. Although West Basin does not provide all of the supplies needed to meet these demands, this 2015 UWMP provides a complete picture of the historical and projected supplies to be used by its retail agencies to meet the overall demand within West Basin's service area.

While this section provides a discussion of the more traditional imported and groundwater supplies, alternative supplies, such as recycled water and desalinated ocean water and brackish water, are discussed within Sections 9 and 10 respectively. Water quality for all supplies is discussed in Section 6 of this UWMP.

4.1 West Basin Service Area Water Supply Portfolio

Since its formation in 1947, West Basin has fulfilled its responsibility of providing its customer agencies with supplemental water supplies to meet increasing regional demands. Prior to West Basin, the average customer agency operating within the area relied completely on groundwater.

Historically, West Basin's primary supply source was imported water from Metropolitan. Initially this was 100% Colorado River Aqueduct (CRA) water until the 1970s when the State Water Project began operating and West Basin received a combination of CRA water and SWP water. However, in the 1990s West Basin began increasing its development of local supplies in response to the declining reliability of imported water. A combination of regulatory constraints on supplies from the Bay-Delta, the increasing frequency of cyclical droughts and uncertainties surrounding climate change have justified the continued need to develop local supplies and aggressively pursue reducing water demand through conservation. West Basin has been able to support the diversification of supplies available to its retail agencies to date primarily through the development of recycled and conserved water supplies. These supplies are served directly to its customer agencies and indirectly as the replenishment supplies necessary to maximize groundwater production.

As Tables 4-1 and 4-2 show, West Basin is projecting to continue to improve the reliability of its supplies to its customer agencies by increasing recycled water supplies as well as potentially investing in over 20,000 AFY of desalinated ocean water supply. Coupled with an additional increase of conserved supply through water use efficiency programs, the overall imported water use is expected to be reduced from current levels by 17 percent within the next 20 years.

Table 4-1 West Basin's Service Area Current Water Supply (AFY) (West Basin-Developed Supplies Only)

Wholesale: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2015		
		Actual Volume	Water Quality	Total Right or Safe Yield *(optional)*
Desalinated Water	Brackish groundwater	690	Drinking Water	
Purchased or Imported Water	Direct Use and Replenishment	105,569	Drinking Water	
Recycled Water	Delivery for the West Basin service area only	29,110	Recycled Water	
	Total	**135,369**	-	-

Table 4-2: West Basin's Service Area Projected Water Supply (AFY) (West Basin-Developed Supplies Only)

Wholesale: Water Supplies — Projected						
Water Supply	Additional Detail on Water Supply	Projected Water Supply *Report To the Extent Practicable*				
		2020	2025	2030	2035	2040 *(opt)*
		Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Desalinated Water	Brackish groundwater	1,000	1,000	1,000	1,000	1,000
Desalinated Water	Ocean Water	0	21,500	21,500	21,500	21,500
Purchased or Imported Water	Direct Use and Replenishment	98,426	77,654	77,673	77,913	77,491
Recycled Water	Delivery for the West Basin service area only	38,894	44,135	44,135	44,135	44,135
	Total	**138,320**	**144,289**	**144,308**	**144,548**	**144,126**

Today, these agencies rely on an increasingly diverse mix of water resources provided by West Basin including: 57 percent imported, 9 percent non-potable recycled water, 16 percent conserved supply through water use efficiency measures, and less than 1 percent desalinated brackish groundwater (18 percent is provided by groundwater that is not managed by West Basin). It is projected that by 2040, the resource mix on average will be 41 percent imported, 24 percent non-potable recycled water, 12 percent desalinated ocean water and brackish groundwater, and 23 percent conservation as shown in Figure 4-1.

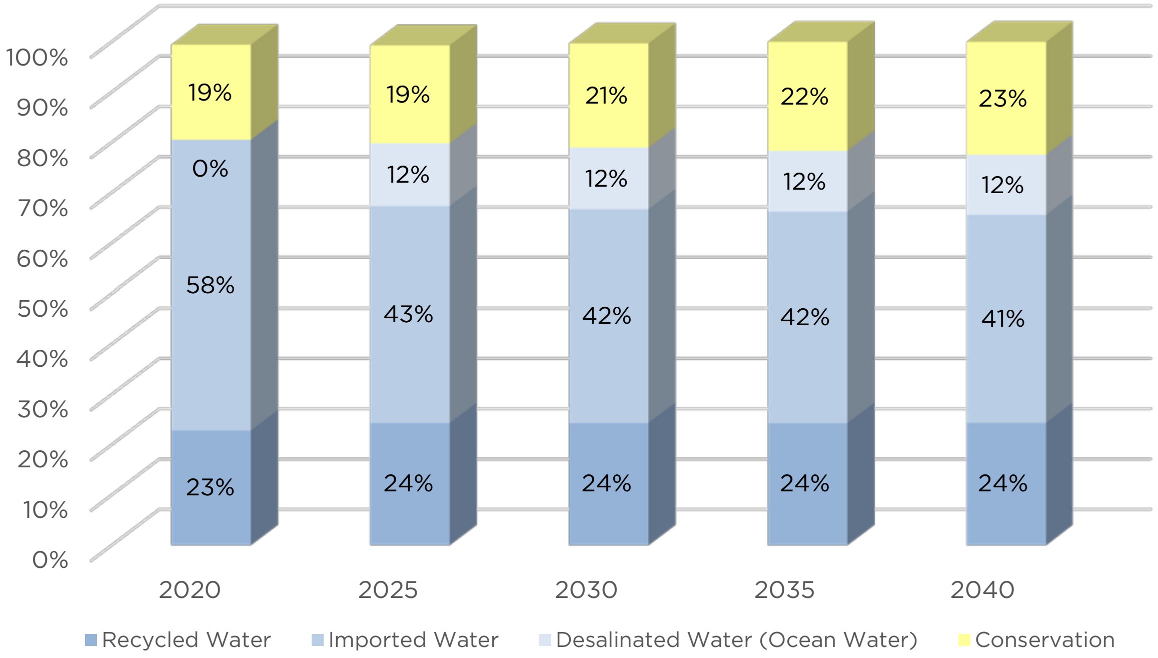


Figure 4-1: West Basin Service Area Projected Water Supplies

4.2 Imported Water Supply

West Basin purchased 105,569 AF of water from Metropolitan to meet retail demand in 2015. Metropolitan supplies originate from the CRA and SWP to meet West Basin's retail and replenishment demands. In recent years, Metropolitan's imported supplies have become increasingly restricted given more frequent and prolonged droughts, and recent court-ordered Bay-Delta export restrictions that have limited the amount of SWP water available for use.

These restrictions have resulted in shortage allocations for West Basin in three of the past eight years and limited availability of water for basin replenishment use. As a result, West Basin has been challenged to maximize the efficient use of this supply as well as explore ways to continue to develop alternative supplies. This challenge has resulted in West Basin's goal of reducing its projected need for imported water supplies from about 57 percent today to 43 percent by 2025, reducing the overall energy use of West Basin's sources and shifting to locally-produced reliable water supply.

4.2.1 Colorado River Resources

Metropolitan owns and operates the CRA, which connects the Colorado River to Metropolitan's regional distribution system. The CRA has a capacity of 1.25 Million AFY (MAF) to transport Metropolitan's current contracted entitlement of 550 Thousand AFY (TAF) of Colorado River water. Metropolitan maintains a full aqueduct of deliveries in most years through a variety of innovative partnerships and programs with other Colorado River users.

Metropolitan and the State of California have acknowledged that they could obtain less water from the Colorado River in the future. The U.S. Secretary of Interior asserted that California had to limit its use of Colorado River supplies to 4.4 MAF per year, plus any available surplus water. California's Colorado River Water Use Plan characterizes how California would develop a combination of programs to meet this limit as well as how to use any available surplus water. In 2003, the Quantification Settlement Agreement (QSA) among California agencies with Colorado River rights established the baseline water use for each of the agencies and facilitates the transfer of water from agricultural agencies to urban uses. The QSA is currently ruled as invalid due to multiple legal proceedings that have taken place over the past eight years. Metropolitan has filed appeals that will stay the ruling until the outcome of the appeal. If the ruling stands, it could delay and potentially increase the cost of the QSA's supply development programs.

Metropolitan has developed a number of supply and conservation programs to increase the amount of supply available from the CRA. However, other users along the River have rights that will allow their water use to increase as their water demands increases. The Colorado River faces long-term challenges of water demands exceeding available supply with additional uncertainties due to climate change. Because Metropolitan holds the lowest priority rights in California during a normal Lake Mead storage condition, future supply available could decrease.

The Colorado River Basin has been experiencing a prolonged drought, where runoff above Lake Powell has been below average for twelve of the last sixteen years. Within those sixteen years, runoff in the Colorado River Basin above Lake Powell from 2000 through 2007 was the lowest eight-year runoff on record. While runoff returned to near normal conditions during 2008-2010, drought returned in 2012 with runoff in 2012 being among the four driest in history. During these drought conditions, Colorado River system storage has decreased to 50 percent of capacity.

4.2.2 State Water Project Resources

The SWP is 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. Depending on the water supply availability, water supply agencies may implement increased conservation measures or explore new local projects and supplies.

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 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.

The California WaterFix (formerly the Bay Delta Conservation Plan or BDCP) is being prepared through a collaboration of state, federal, and local water agencies, state and federal fish agencies, environmental organizations, and other interested parties. At the outset of the BDCP process, a planning agreement was developed and executed among the participating parties, and a Steering Committee was formed. The plan was to identify a set of water flow and habitat restoration actions that would contribute to the recovery of endangered and sensitive species and their habitats in California's Bay-Delta. The goal of the BDCP was to provide for both species/habitat protection and improved reliability of water supplies.

The First Administrative Draft of the BDCP was released in March 2012. The Administrative Draft Environmental Impact Report (EIR)/ Environmental Impact

Statement (EIS) analyzed 15 alternatives, including a broad combination of water delivery configurations, capacities, operations and habitat restoration targets, as well as a no action alternative. The alternatives are the result of public scoping sessions conducted in 2008 and 2009, the Sacramento-San Joaquin Delta Reform Act, ongoing public discussions, and input from responsible/trustee state agencies and NEPA cooperating agencies.

In July 2012, Governor Jerry Brown and U.S. Interior Secretary Ken Salazar outlined revisions to the proposed BDCP plan, along with a full range of alternative proposals. Elements of the preferred proposal include construction of two side-by-side tunnels and water intake facilities with a total capacity of 9,000 cfs - down from the earlier proposal of 15,000 cfs. Operation of the facilities was planned to be phased in over several years.

Throughout 2012 and 2013, additional public meetings were held to answer questions and gather public comments. In August 2013, an optimized proposal was released that balanced costs, engineering design, and ease of construction while significantly reducing local dislocation and disturbance in the Delta. In December 2013, the State released the Draft BDCP and the Draft EIR/EIS. The documents detailed 22 specific actions, called Conservation Measures, which included new water delivery facilities in the north Delta, as well as measures to restore or protect up to 150,000 acres of habitat and measures to address other stressors to fish and wildlife in the Delta.

In April 2015, State agencies announced a modified preferred alternative, Alternative 4A. Alternative 4A (California WaterFix) was developed as the new California Environmental Quality Act (CEQA) and National Environmental Protection Act (NEPA) Preferred Alternative, replacing Alternative 4 (the proposed BDCP). Alternative 4A includes the conveyance facilities proposed under Alternative 4 and those mitigation measures and environmental commitments needed to obtain necessary permits and authorizations for implementation under Section 7 of the Federal Endangered Species Act (ESA) and through the California Department of Fish and Wildlife's 2081(b) process.

California WaterFix and EcoRestore would be implemented under different Federal and State ESA regulatory permitting processes (Section 7 versus Section 10(a) of the Federal ESA, and pursuant to section 2081 of the State ESA instead of the Natural Community Conservation Planning Act). This would fulfill the requirement of the 2009 Delta Reform Act to contribute toward meeting the coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem.

The new water conveyance facilities would be constructed and operated under the California WaterFix, which proposes design changes to the water conveyance facilities. Refinements to the design reduce the overall environmental/construction impacts, and increase long term operational and cost benefits. Some of the engineering configuration improvements include moving the tunnel alignment away from local communities and environmentally sensitive areas. Reconfiguration of intake and pumping facilities lessen construction impacts in local communities and longer term operational impacts.

The main objective under the EcoRestore Program is the restoration of at least 30,000 acres of Delta habitat, with the near-term goal of making significant strides toward that objective by 2020. These restoration programs would include projects and actions that are in compliance with preexisting regulatory requirements designed to improve the overall health of the Delta. Other priority restoration projects would also be identified by the Sacramento-San Joaquin Delta Conservancy and other agencies and local governments. Funding would be provided through multiple sources, including various local and federal partners, state bonds, and other state-mandated funds. SWP/CVP contractors would provide funds as part of existing regulatory obligations. The California WaterFix is being evaluated in the partially Recirculated Draft EIR/Supplemental EIS released in July 2015. In that document, the cumulative impacts of the California WaterFix and EcoRestore Program are evaluated, along with other reasonably foreseeable future projects.

4.2.3 Types of Metropolitan Supply

Metropolitan offers different types of imported water to its member agencies depending on the ultimate use. Among them, West Basin has delivered Non-Interruptible Water (treated full-service) and historically, Seasonal Treated Replenishment Water (in-lieu replenishment).

Non-Interruptible Water is the treated firm supply that is available all year and not subject to interruption. Historically, West Basin has delivered an average of about 150,000 AFY of non-interruptible water. It is used as the main supplemental supply to several cities and water agencies that pump groundwater as their base supply and as the only potable supply for the West Basin retail water agencies. Imported water also fulfills a portion of the supplies for the Dominguez Gap Seawater Barrier and the West Coast Basin Seawater Barrier.

Seasonal Treated Replenishment Water was last used by West Basin's customer agencies in FY 2007 and is a program that is no longer available.

4.3 Groundwater Supply

Although West Basin does not supply groundwater to retail agencies, it does supply a portion of the supply used for groundwater replenishment. Groundwater has for many years represented roughly a fifth of the supply used to meet overall demand within West Basin's service area. Today, customer agencies operating within West Basin's service area rely on groundwater production to meet just over 20 percent of their cumulative retail demand and this is expected to continue through 2040. A portion of West Basin's water supply portfolio is desalinated brackish groundwater. Currently, 690 AF of their water supply is from brackish groundwater. More detailed information concerning West Basin's desalinated water usage can be found in Section 10.

The WCGB covers approximately 140 square miles and is bounded on the north by the Baldwin Hills and the Ballona Escarpment, on the east by the Newport-Inglewood

Uplift, to the south by San Pedro Bay and the Palos Verdes Hills, and to the west by Santa Monica Bay. Aquifers in the WCGB are generally confined and receive the majority of their natural recharge from adjacent groundwater basins or from the Pacific Ocean (seawater intrusion). Figure 4-2 displays the location of the WCGB within the WRD service area.

Figure 4-2: Map of West Coast Groundwater Basin Within the WRD Service Area

West Basin overlies nearly all of the adjudicated WCGB. In the early 1940s, extensive over pumping of the WCGB had led to critically low groundwater levels, resulting in seawater intrusion along the coast, serious overdraft, and the decline of water levels. Annual pumping prior to the adjudication of groundwater rights in the early 1960s reached levels as high as 94,100 AF. This situation precipitated an adjudication that limits the allowable extraction that could occur in any given year and assigned water rights to WCGB pumpers. The adjudication for the WCGB was set at 64,468.25 AFY (as shown in Table 4-3). This amount was set higher than the natural replenishment amounts, creating an annual deficit known as the “Annual Overdraft.” In order to combat this Annual Overdraft, WRD purchases and recharges additional water to make up for the overdraft.

In December 2014, the Superior Court granted a motion by WRD, City of Inglewood, City of Long Beach, City of Manhattan Beach, City of Los Angeles, City of Torrance, California Water Service, Golden State Water Company and other parties to amend the West Coast Basin Judgment to establish a legal framework for the storage and extraction of stored water in the West Coast Basin. The Judgment Amendment will permit the storage of up to 120,000 acre-feet, which is the available, safe storage capacity of that basin. The legal framework permits a groundwater pumper with adjudicated rights to store water and subsequently extract that stored water without the extraction counting against its water rights and without having to pay the Replenishment Assessment (RA). The Judgment Amendment makes possible the storage of “surplus” imported water in the rare instances when it is available for use in the more frequent instances when it is not, further enhancing the region’s water supply reliability.

The court’s decision culminated a journey that started in 1999. After a failed facilitated process among the multiple water rights stakeholders and WRD and a two-year state-sponsored mediated effort that resulted in the filing of the petition in April 2009, several legal challenges travelled to the Appellate court for resolution. After several rounds of negotiation and modest changes to the petition, the parties that originally opposed the petition ended up supporting it. Pursuant to the Judgment Amendment, WRD assumed administrative Watermaster duties from the California Department of Water Resources on July 1, 2015.

Table 4-3: West Coast Groundwater Pumping Rights (AFY)

Retail Agencies	2014-2015 Pumping Rights
California Water Service - Dominguez	10,417
California Water Service Co. - Hawthorne	1,882
California Water Service Co. – Hermosa/Redondo	4,070
Golden State Water Co.	7,502
City of El Segundo	953
City of Inglewood	4,450
City of Lomita	1,352
City of Manhattan Beach	1,131
Non-Retail Water Pumpers [1]	32,710
Total	**64,468**

Source: West Coast Basin Watermaster Report, WRD: FY 2014-15

[1] Water right holders that are not water retail agencies: i.e. Nurseries, Cemeteries, Industries, and Refineries.

To allow full WCGB rights to be pumped while limiting seawater intrusion, WRD purchases non-interruptible imported and recycled water supplies from West Basin for injection by the Los Angeles County Department of Public Works at the West Coast and Dominguez Gap Seawater Intrusion Barriers. WRD is the entity responsible for maintaining and replenishing the WCGB. WRD is a special district created by the State and governed by a five-member elected body to replenish and protect the WCGB with imported water and recycled water (WRD, Engineering Survey and Report, May 2015).

Two of West Basin’s retail agencies also import groundwater from outside the West Basin service area from the adjacent Central Groundwater Basin to meet their demand (California American Water Co. and California Water Service – Dominguez). The financial costs to pump groundwater have been and are projected to remain less than the cost to purchase imported water so it can safely be assumed that water retailers will continue to maximize their groundwater rights.

As evidenced in Table 4-4 below, the volume of groundwater pumped during the last five years from the West Coast and Central Groundwater Basins has been declining due to strong water conservation efforts as a result of the drought, short term water quality problems with some retailer's systems, and a temporary tightening of the lease market reducing available rights. The reduction in pumping caused a rebound in groundwater levels in the WCGB despite the lack of rainfall.

Table 4-4: Groundwater Volume Pumped (AF)

Basin Name(s)	2010	2011	2012	2013	2014	2015
West Coast Basin	35,782	34,646	33,701	31,381	31,288	28,700
Central Basin	4,909	5,636	4,867	4,793	5,537	4,294
Total	**40,691**	**40,283**	**38,568**	**36,174**	**36,825**	**32,994**

Source: WRD, Monthly Production Reports

Table 4-5 shows the historical groundwater replenishment supplies for the West Coast and Dominguez Gap Barriers.

Table 4-5 Historical Groundwater Replenishment Supply (AF)

	2010	2011	2012	2013	2014
West Coast Barrier					
Imported Water	8,145	9,914	3,879	8,738	5,826
Recycled Water	7,797	7,320	6,566	6,622	12,372
Sub-Total	**15,941**	**17,233**	**10,445**	**15,360**	**18,198**
Dominguez Gap Barrier					
Imported Water	4,909	3,620	4,625	2,582	3,460
Total	**20,851**	**20,853**	**15,070**	**17,942**	**21,658**

Source: WRD, Monthly Production Reports

Table 4-6 shows the projected retail groundwater production to meet West Basin service demands through 2040.

Table 4-6 Current and Projected Retail Groundwater Supply (AF)

Basin Name(s)	2015	2020	2025	2030	2035	2040
West Coast Basin[1]	28,700	31,570	31,570	31,570	31,570	31,570
Central Basin	4,294	4,723	4,723	4,723	4,723	4,723
Total	**32,994**	**36,293**	**36,293**	**36,293**	**36,293**	**36,293**

[1] Inside the service area only.
Source: 2015 figure based on actual usage. Projection based on projected 10 percent increase after 2015 due to the recent amended judgement for the two groundwater basins.

Table 4-7 shows the projected replenishment (or seawater intrusion barrier) supplies to be met by West Basin's retail agencies through 2040.

Table 4-7 Current and Projected Replenishment Groundwater Supply (AF)

	2015	2020	2025	2030	2035	2040
Imported Water[1]	7,354	3,800	-	-	-	-
Recycled Water[2]	12,403	17,000	17,000	17,000	17,000	17,000
Total	**19,757**	**20,800**	**17,000**	**17,000**	**17,000**	**17,000**

[1] Imported water deliveries to the West Coast Barrier end after 2015. Deliveries to the Dominguez Gap Barrier end after 2020 when it is expected to be provided recycled water by the Los Angeles Department of Water and Power.

[2] Recycled water deliveries provided only to the West Coast Barrier.

4.4 Water Transfers and Exchanges

Water transfers and exchanges are management tools to address increased water needs in areas of limited supply. Although transfers and exchanges of water do not generate new supply, these management tools distribute water where it is abundant to where it is limited.

Metropolitan has played an active role statewide in securing water transfers and exchanges as part of their planning goals. Although West Basin is a member of Metropolitan, West Basin has yet the need or opportunity to directly pursue a water transfer. It is important to note that in the current 4-year drought California is experiencing, runoff in northern California watersheds in 2014 and 2015 were so low that virtually no transfer water was available and Metropolitan was not able to use transfers from those sources to supplement available supplies. The lack of transfer water during very severe and prolonged droughts as the state has been experiencing places greater dependence on stored water during shortages and illustrates the benefits of local supplies that reduce the demand on Metropolitan in dry years and times of shortage.

4.5 Alternative Sources of Supply

West Basin is actively diversifying its water supply portfolio beyond traditional imported water and groundwater supplies. This 2015 UWMP dedicates entire sections to discuss the alternative supply projects and programs such as recycled water (Section 9), desalinated ocean water and brackish groundwater (Section 10), and increased water use efficiency programs (Section 7). West Basin is pursuing these alternative supplies as part of its Water Reliability initiative.

Section 5 Water Supply Reliability

Every urban water supplier is required to assess the reliability of its water service to its retail agencies under normal, dry, and multiple dry years. There are various factors that may impact reliability of supplies such as legal, environmental, water quality, and climatic, which are discussed below. These factors can result in immediate (facility failures), near-term (SWP limitations), or long-term (climate change) impacts to reliability and must therefore be considered in future planning.

The impacts of these factors on reliability increase under single dry and multiple dry year hydrologic patterns. West Basin's Water Reliability Program goal to expand and further diversify its supply portfolio is the most important step toward improving the reliability of supplies. West Basin has completed comprehensive water shortage contingency planning to provide reliability in the event of a water shortage. Based on current conditions, West Basin's estimate of the minimum available water supply for the next three years is shown in Table 5-1. Expected water supply for normal and single and multiple dry years is discussed later in this section.

Table 5-1: Minimum Available Water Supply (AF)

Wholesale: Minimum Supply Next Three Years			
	2016	2017	2018
Available Water Supply	138,320	138,320	138,320
NOTES: Metropolitan Demand Forecast.			

5.1 Potential Impacts to Reliability

Reliability within the West Basin service area is a composite of the reliability of each source of supply. Further explanations of some of the factors identified by West Basin that may have an impact on reliability are included in the following subsections.

5.1.1 Imported Water Reliability

As discussed in Section 4, Metropolitan has and will continue to contend with considerable challenges to maintaining a reliable source of imported water supply for its member agencies. After learning from the droughts of 1977-78 and 1989-92, Metropolitan, in conjunction with its member agencies, instituted a resources planning process that is based on diversification of the region's water supply portfolio and continued efficient water use. This integrated resource planning process has recognized that only through a mix of imported and member agency local supplies, along with aggressive implementation of water conservation, can the Metropolitan service area attain overall reliability of water supply. This integrated planning effort has resulted in the following documents:

- **1996, 2004, 2010, and 2015 Integrated Resources Plans (IRP):** Metropolitan's IRP process assessed potential future regional demand projections based upon anticipated population and economic growth as well as conservation potential. The IRP also includes regional supply strategies and implementation plans to better manage resources, meet anticipated demand, and increase overall system reliability.
- **1999 Water Surplus and Drought Management Plan (WSDM):** The WSDM provides the policy guidance to manage the region's water supplies by integrating the operating activities of supply surplus and shortage to achieve the reliability goals of the IRP.
- **2015 Water Supply Allocation Plan (WSAP):** The WSAP includes the specific formula for calculating member agency supply allocations and the key implementation elements needed for administering the allocation. The need for the WSAP arose after the 2008 Bay-Delta biological opinions and rulings that limited SWP supplies to its contractors including Metropolitan. The WSAP 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 up to 50 percent.

All of these planning documents recognize that the reliability of the Metropolitan service area is dependent on improving the reliability of imported supplies from the Colorado River and State Water Project as well as the successful implementation of future local supplies. Metropolitan is a supplemental supplier of water to Southern California and that regional reliability cannot be achieved without successfully addressing challenges to imported water reliability, developing reliable local supplies and water use efficiency. This dependence on an integrated approach to water reliability and diversification of supplies has been the foundation of DWR's Bulletin 160, the State Water Plan, through its last several updates and is the cornerstone of Governor Brown's Water Action Plan. Under its assumptions for the successful implementation of imported water reliability programs, future local water supplies and continued conservation, Metropolitan's 2015 UWMP finds that it is able to meet full-service demands of its member agencies for the period of 2020 through 2040 during normal years, single dry year, and multiple dry years. Some of the most significant factors affecting reliability for imported water supplies include legal, environmental, water quality and climatic changes. As noted above, successful implementation of Metropolitan's UWMP is dependent on the continued successful implementation by local agencies, such as West Basin, of local water supply projects.

5.1.2 Legal

The federal and state Endangered Species Acts permitting strategy of the California WaterFix has changed from a Section 10 Habitat Conservation Plan (HCP)/ Natural Communities Conservation Plan (NCCP) under the Bay Delta Conservation Plan (BDCP) to a Section 7 Consultation. A HCP/NCCP provides long term guarantees and protection from additional listing of species. A Section 7 Consultation does not provide those same guarantees and the addition of more species under the federal Endangered Species Act and new regulatory requirements could impact SWP operations. These potential future listings and new regulations could result in additional export reductions, releases of additional water from storage or other operational changes impacting water supply operations and supply availability to Metropolitan.

5.1.3 Environment

Endangered species protection needs in the Delta have resulted in operational constraints to the SWP system, as mentioned previously in Section 4.

5.1.4 Water Quality

Metropolitan is responsible for providing high quality potable water throughout its service area. However, changes in water quality due to various reasons may affect the reliability of imported water to Metropolitan. More information concerning the water quality of West Basin's supplies can be found in Section 6.

5.1.5 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.

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. Much of Metropolitan's infrastructure investments over the last 20 years, Diamond Valley Lake, Central Valley groundwater banks and the Inland Feeder pipeline, have been focused on providing more storage and operational flexibility to place water in storage to better manage changes in the hydrologic cycle. With climate change forecasts for earlier season runoff, the use of storage will only gain in importance.

5.1.6 Groundwater Reliability

The reliability of groundwater supplies dictates how much supplemental supply West Basin will need to provide its retail agencies to meet their demands. Groundwater is a highly reliable supply since it is not immediately susceptible to changes in climate and surface flows. However, the two main factors that impact the reliability of groundwater supplies are legal and water quality.

Because the WCGB is an adjudicated basin, pumping rights are established for particular entities. However, changes to basin operations could result from reallocation of pumping rights, opportunities to utilize the WCGB for storage, remediation of contaminated plumes, and pumping expansion for further extraction. These are all considered legal impacts because they would require addressing the existing court-ordered judgment.

The LACDPW owns and maintains the seawater barrier system, collaborating with WRD to determine how much barrier injection water is required in order to protect the aquifer from seawater intrusion. WRD determines how much water is needed to replenish the WCGB to support pumping. West Basin supplies WRD with recycled and imported water to meet these demands.

During the time in which groundwater pumping was exceeding recharge and replenishment, seawater intruded into the WCGB. Once the intrusion barriers were brought on-line, the intrusion was stopped, but a large plume of saline water has remained trapped within the WCGB. The groundwater supply projections have already considered the presence of the plume and therefore anticipate no change in supply reliability as a result of its existence. The saline plume and the methods being employed by West Basin and its retail and neighboring agencies to manage the plume are further discussed in Section 6: Water Quality.

5.1.7 Recycled Water and Ocean Water Desalination Reliability

Hydrologically-dependent supplies such as surface water and groundwater dependent on imported surface water for replenishment, present on-going challenges in terms of availability and reliability. West Basin's focus is on improving reliability by expanding its supply mix with hydrologically-independent supplies. Recycled water and ocean water desalination are reliable water supplies in the West Basin service area because there is a consistent source of water available for treatment. West Basin has completed an ocean water desalination pilot study and a demonstration facility to further determine environmental safeguards, energy and cost savings possible prior to a full scale program slated for completion by 2023. During the current unprecedented 4-year state-wide drought, the SWRCB

Emergency Regulation for Urban Conservation has increasingly focused on the importance of drought resilient supplies like recycled water and ocean water desalination to manage and prepare for what are expected to be more frequent and severe future droughts. The planned recycled water and ocean water desalination projects that West Basin intends to implement to improve long term reliability are further detailed in Sections 9 and 10, respectively.

5.1.8 Climate Change Uncertainties

Climate change adds its own new uncertainties to the challenges of planning. As a Metropolitan member agency, West Basin is contributing to Metropolitan's activities to better understand and plan for potential long-term climate change impacts. As a water supplier to its customer agencies, West Basin is enacting resource strategies such as expanded water recycling and development of ocean water desalination supplies that are key elements of adapting to long-term climate change.

According to Metropolitan's 2015 Draft RUWMP, Metropolitan uses historical hydrological data to forecast both the frequency and the severity of future drought conditions, as well as the frequency and abundance of above-normal rainfall. However, weather patterns can be expected to shift dramatically and unpredictably in a climate driven by increased concentrations of carbon dioxide in the atmosphere. Metropolitan is committed to performing its due diligence with respect to climate change.

While uncertainties remain regarding the exact timing, magnitude, and regional impacts of these temperature and precipitation changes, researchers have identified several areas of concern for California water planners. These include:

- Reduction in Sierra Nevada snowpack
- Increased intensity and frequency of extreme weather events
- Rising sea levels resulting in:
    - Increased risk of damage from storms, high-tide events, and the erosion of levees
    - Potential pumping cutbacks on the SWP and CVP
    - Increased threats to coastal groundwater basins

Other important issues of concern due to global climate change include:

- Changes in urban and agricultural demand levels and patterns
- Impacts to human health from water-borne pathogens and water quality degradation
- Declines in ecosystem health and function
- Alterations to power generation and pumping regimes

In March 2002, the Metropolitan Board adopted policy principles on global climate change as related to water resource planning. The Principles stated in part that 'Metropolitan supports further research into the potential water resource and quality effects of global climate change, and supports flexible "no regret" solutions that provide water supply and quality benefits while increasing the ability to manage future climate change impacts.' To date, Metropolitan has completed the following actions to meet these Principles:

- Membership in the Water Utility Climate Alliance that has resulted in completion of several activities including:
    - Letter of support for Western Water Assessment's continued funding as a Regional Integrated Sciences and Assessments team under the National Oceanic and Atmospheric Administration (NOAA)
    - Letter of support for the 2009 Kerry-Boxer Water Utilities Mitigation and Adaptation Partnerships congressional bill addendum
    - Regular communication and consultations with federal agencies on the U.S. Environmental Protection Agency's Climate Ready Water Utility Working Group
    - NOAA Climate Service and January 2010 International Climate Change Forum
    - Released "Options for Improving Climate Modeling to Assist Water Utility Planning for Climate Change"
- Working with local water supply agencies, state and federal agencies and non-governmental organizations to collaborate on climate change related planning issues.
- Using Metropolitan's IRP process to incorporate climate change science into regional plans by providing adaptive management strategies, creating buffer supplies, and encouraging the more efficient use of existing supplies.

5.2 Projected Supply Reliability

As a member agency of Metropolitan, West Basin receives imported water from Metropolitan through connection to Metropolitan's regional distribution system. Although pipeline and connected capacity do not guarantee the availability of water, per se, 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 West Basin from existing water transmission facilities. The demand and supplies listed below also include local brackish groundwater supplies that are managed by West Basin.

California and Metropolitan's service area has experienced two severe droughts in the last seven years. Both droughts resulted in water shortages to Metropolitan and cutbacks in supplies to its member agencies. During this current drought, SWP Table A Allocations were at record lows with 5% of requested deliveries being met in 2014 and 20% of requested deliveries in 2015. With an unprecedented fourth consecutive dry year in 2015 the importance of Metropolitan's stored water to regional reliability has become abundantly apparent. During water shortages it is important to analyze reliability in the context of Metropolitan's service area's current experience. In analyzing its reliability, West Basin is assuming that in multiple dry years there will be similar supply availability in the future comparable to what is currently being experienced during this drought. Metropolitan will be allocating water to its member agencies under its Water Shortage Allocation Plan (WSAP) and will have 1.7 million acre feet available. That is the approximate amount of available supplies Metropolitan had to allocate in 2014 and 2015. Because of its robust storage reserves it is assumed that in normal weather years and single dry years Metropolitan will be able to meet all demands for water.

For the 2015 UWMP, the average year was selected as West Basin's 2015 demand. Due to ongoing drought conditions within California and the increased implementation of mitigation measures, 2015 was determined to represent an average water demand for this UWMP.

5.2.1 Single-Dry Year

A single-dry year is defined as a single year of zero to minimal rainfall within a period that average precipitation is expected to occur. West Basin has documented that it is 100 percent reliable for single dry year demands from 2020 through 2040 with a demand increase of 103 percent using hydrology from 1977 as the single dry-year. Metropolitan projected demands based on historical data and this was compared with average year demand developed by West Basin and Metropolitan. An average was taken of each five-year increment demand increase for Table 5-2.

The extra demand can readily be met with a slight increase in imported water purchases given that West Basin is gradually reducing its dependence on imported supplies in an average year and therefore should have imported water allocations available to meet these slight increases in demand.

5.2.2 Multiple-Dry Year

Multiple-dry years are defined as three or more years with minimal rainfall within a period of average precipitation. West Basin is capable of meeting all retail demands with significant reserves held by Metropolitan, local supplies, and conservation in multiple dry years from 2020 through 2040 with an average demand increase of 105 percent using 1990-1992 hydrology as the driest years. This was compared to the average year demand developed by West Basin. For each five-year increment a different increase was selected to represent anticipated supply and demand conditions at that time. The basis of the water year is displayed in Table 5-2.

Table 5-2: Basis of Water Year Data

Wholesale: Basis of Water Year Data			
Year Type	Base Year	Available Supplies if Year Type Repeats	
		Agency may provide volume only, percent only, or both	
		Volume Available (AF)	% of Average Supply
Average Year	2015	135,369	100%
Single-Dry Year	1977	139,430	103%
Multiple-Dry Years 1st Year	1990	142,137	105%
Multiple-Dry Years 2nd Year	1991	142,137	105%
Multiple-Dry Years 3rd Year	1992	142,137	105%
Agency may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If an agency uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.			
NOTES: Provided by WBMWD & Metropolitan Demand Projections. Demand includes recycled water, desalination, and imported water with barrier supplies.			

As under single dry year conditions, imported supplies will be purchased to meet any annual increase in demand. As a result, there are no anticipated shortages under the single dry year scenario. As noted above, under multiple-dry year scenarios West Basin assumed Metropolitan will be facing similar supply constraints and conditions as currently being experienced and will be in allocation. This is discussed in further detail in section 5.3.

5.2.3 Supply and Demand Assessment

A comparison between the supply and demand for projected years between 2020 and 2040 is shown in Table 5-3. As stated above, the available supply will meet projected demand due to diversified supply and conservation measures.

Table 5-3: Normal Year Supply and Demand Comparison (AF)

Wholesale: Normal Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 *(Opt)*
Supply totals *(autofill from Table 4-2)*	138,320	144,289	144,308	144,548	144,126
Demand totals *(autofill from Table 3-6)*	138,320	144,289	144,308	144,548	144,126
Difference	0	0	0	0	0

A comparison between the supply and the demand in a single-dry year is shown in Table 5-4. As stated above, the available supply will meet projected demand due to diversified supply and conservation measures.

Table 5-4: Single-Dry Year Supply and Demand Comparison (AF)

Wholesale: Single Dry Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 (Opt)
Supply totals	142,470	148,618	148,637	148,884	148,450
Demand totals	142,470	148,618	148,637	148,884	148,450
Difference	0	0	0	0	0
NOTES: From WBMWD supplied demand projections, includes imported and desalination brackish/ocean water only.					

A comparison between the supply and the demand in multiple-dry years is shown in Table 5-5.

This analysis assumes Metropolitan is in a similar water supply condition as presently experienced and is allocating supplies to its member agencies according to its policies and has approximately 1.7 MAF available (a Regional Shortage Level 3 cutback under WSAP). It is assumed under WSAP that West Basin will receive approximately 5% of the available supplies being allocated by Metropolitan.

Table 5-5: Multiple-Dry Year Supply and Demand Comparison (AF)

Wholesale: Multiple Dry Years Supply and Demand Comparison						
		2020	2025	2030	2035	2040 (Opt)
First year	Supply totals	124,894	151,503	151,523	151,775	151,332
	Demand totals	145,236	151,503	151,523	151,775	151,332
	Difference	(20,342)	0	0	0	0
Second year	Supply totals	145,236	151,503	151,523	151,775	151,332
	Demand totals	145,236	151,503	151,523	151,775	151,332
	Difference	0	0	0	0	0
Third year	Supply totals	145,236	151,503	151,523	151,775	151,332
	Demand totals	145,236	151,503	151,523	151,775	151,332
	Difference	0	0	0	0	0
NOTES: From WBMWD supplied demand projections, includes imported and desalination brackish/ocean water only.						

5.3 Water Shortage Contingency Plan

The SWRCB found that California has historically been subject to multi-year droughts, and that the American 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 in January 2014 and signed the 2014 Executive Order which 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 the use of water for domestic use is the highest use of water and that the next highest use is for irrigation. In southern California, the development of such policies has occurred at both the wholesale and retail level. This section describes the water supply shortage policies Metropolitan and West Basin have in place to respond to events including catastrophic interruption and up to a 50 percent reduction in water supply.

5.3.1 Metropolitan Water District of southern California

5.3.1.1 Water Surplus and Drought Management Plan

In April 1999, Metropolitan's Board adopted the Water Surplus and Drought Management Plan (WSDM Plan). It provides policy guidance for managing regional water supplies to achieve the reliability goals of the IRP and identifies the expected sequence of resource management actions that Metropolitan will execute during surpluses and shortages to minimize the probability of severe and extreme shortages and shortage allocations. Unlike Metropolitan's previous shortage management plans, the WSDM Plan recognizes the link between surpluses and shortages, and it integrates planned operational actions with respect to both conditions.

5.3.1.2 WSDM Plan Implementation

Each year, Metropolitan evaluates the level of supplies available and existing levels of water in storage to determine the appropriate management stage. Each stage is associated with specific resource management actions designed to (1) avoid an Extreme Shortage to the maximum extent possible and (2) minimize adverse impacts to retail agencies if an Extreme Shortage occurs. The current sequencing outlined in the WSDM Plan reflects anticipated responses based on detailed modeling of Metropolitan's existing and expected resource mix.

5.3.1.3 Surplus Stages

Metropolitan's supply situation under the WSDM Plan is considered to be in surplus as long as net annual deliveries can be made to water storage programs. The WSDM Plan further defines five surplus management stages that guide the storage of surplus supplies in Metropolitan's storage portfolio. Deliveries for storage in the Diamond Valley Lake and in the SWP terminal reservoirs continue through each surplus stage provided there is available storage capacity. Withdrawals from Diamond Valley Lake for regulatory purposes or to meet seasonal demands may occur in any stage. Deliveries to other storage facilities may be interrupted, depending on the amount of the surplus.

5.3.1.4 Shortage Stages

The WSDM Plan distinguishes between Shortages, Severe Shortages, and Extreme

Shortages. Within the WSDM Plan, these terms have specific meaning relating to Metropolitan's ability to deliver water to its member agencies.

Shortage: Metropolitan can meet full-service demands and partially meet or fully meet interruptible demands, using stored water or water transfers as necessary.

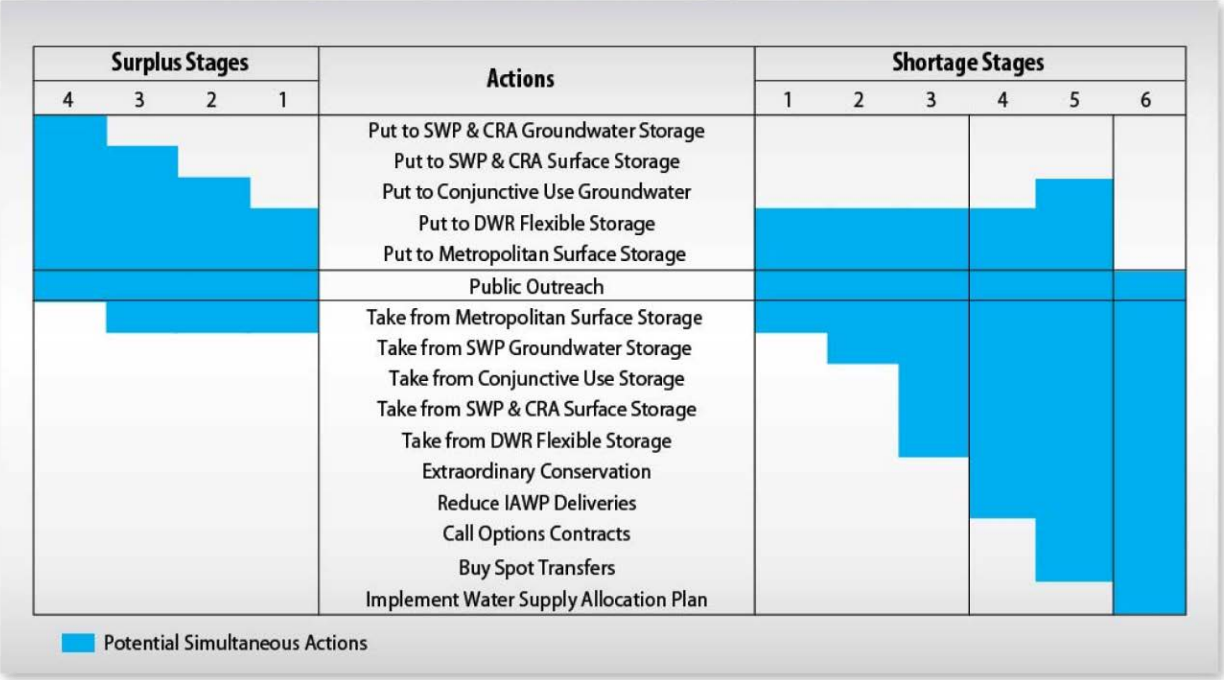
Severe Shortage: Metropolitan can meet full service demands only by using stored water, transfers, and possibly calling for extraordinary conservation. In a Severe Shortage, Metropolitan may have to curtail Interim Agricultural Water Program deliveries.

Extreme Shortage: Metropolitan must allocate available supply to full-service customers.

The WSDM Plan also defines seven shortage management stages to guide resource management activities. These stages are not defined merely by shortfalls in imported water supply, but also by the water balances in Metropolitan's storage programs. Thus, a ten percent shortfall in imported supplies could be a stage one shortage if storage levels are high. If storage levels are already depleted, the same shortfall in imported supplies could potentially be defined as a more Severe Shortage.

When Metropolitan must make net withdrawals from storage to meet demands, it is considered to be in a shortage stage. Under most of these stages, it is still able to meet all end-use water demands. Stages one through four are considered a Shortage, stages five and six are a Severe Shortage, and stage seven is an Extreme Shortage.

Figure 5-1 shows the actions under surplus and shortage stages when a Water Supply Allocation Plan (WSAP) would be necessary to enforce mandatory cutbacks. The overriding goal of the WSDM Plan is to never reach shortage stage seven, an Extreme Shortage. At shortage stage 7 Metropolitan will implement its WSAP to allocate available supply fairly and efficiently to full-service customers (Metropolitan, 2015 Draft UWMP, December 2015).



Surplus Stages				Actions	Shortage Stages					
4	3	2	1		1	2	3	4	5	6
■				Put to SWP & CRA Groundwater Storage						
■	■			Put to SWP & CRA Surface Storage						
■	■	■		Put to Conjunctive Use Groundwater					■	
■	■	■	■	Put to DWR Flexible Storage	■	■	■	■	■	
■	■	■	■	Put to Metropolitan Surface Storage	■	■	■	■	■	
■	■	■	■	Public Outreach	■	■	■	■	■	■
	■	■	■	Take from Metropolitan Surface Storage	■	■	■	■	■	■
				Take from SWP Groundwater Storage		■	■	■	■	■
				Take from Conjunctive Use Storage			■	■	■	■
				Take from SWP & CRA Surface Storage			■	■	■	■
				Take from DWR Flexible Storage			■	■	■	■
				Extraordinary Conservation				■	■	■
				Reduce IAWP Deliveries				■	■	■
				Call Options Contracts					■	■
				Buy Spot Transfers					■	■
				Implement Water Supply Allocation Plan						■

■ Potential Simultaneous Actions

Figure 5-1: Metropolitan Surplus and Shortage Stages

5.3.2 West Basin Municipal Water District

5.3.2.1 West Basin's Stages of Action

When Metropolitan is operating under a shortage stage, West Basin will take the following stages of action:

Stage 1 – West Basin would request a voluntary effort among its customer agencies to reduce imported water deliveries. In addition, West Basin would pursue an aggressive Public Awareness Campaign to encourage residents and industries to reduce their usage of water.

Stage 2 – In addition to the measures described in stage one, West Basin would work with its retail agencies to review and update water waste prohibitions and ordinances to discourage unnecessary water usage.

Stage 3 – In addition to stage one and stage two measures, West Basin would implement its adopted Drought Rationing Plan (DRP) which calls for a curtailment of imported water for each of its customer agencies. This plan includes an adopted allocation methodology and is enforced by a penalty structure. A resolution is included in Appendix F.

5.3.2.2 West Basin's Water Shortage Stages

West Basin is a wholesale water agency. West Basin is responsible for how imported water will be allocated to each customer agency, which will then determine specific stages of shortage actions in accordance with local ordinances. Water Shortage Stages can be implemented depending on the severity of the water shortage situation, in order to respond to a reduction in potable water available for delivery. In addition to water supply reductions, each Stage typically has water use restrictions that promote the efficient use of water, reduce or eliminate water waste, and enable implementation of Water Shortage Contingency Measures. West Basin has three Water Shortage Stages it can enter. A summary of the Water Shortage Stages is displayed in Table 5-6.

Table 5-6: Water Shortage Stages

Wholesale Stages of Water Storage Contingency Plan		
Stage	Complete Both	
	Percent Supply Reduction[1] *Numerical value as a percentage*	Water Supply Condition *(Narrative description)*
1		WBMWD would request for a voluntary effort among its customers to reduce imported water deliveries and would pursue an aggressive Public Awareness Campaign to encourage residents and industries to reduce their usage of water.
2		WBMWD would work with its customer agencies to review and update as needed water waste prohibitions and ordinances to discourage unnecessary water usage.
3		WBMWD would implement its adopted DRP which calls for a curtailment of imported water for each of its customer agencies.
[1] One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.		
NOTES: Percent supply reduction is not available		

5.3.2.3 West Basin's Drought Rationing Plan

The purpose of West Basin's DRP is to provide a method for determining allocations for its member agencies relative to the amount of supplies available when Metropolitan has implemented its Water Supply Allocation Plan to determine West Basin's imported supply allocation. Like Metropolitan, West Basin is a regional wholesaler and cannot enforce end user restrictions – it can only impose allocations relative to its supply. Each of West Basin's member agencies must then determine how to meets its DRP allocation of imported water to avoid over-use penalties.

This section provides an overview of West Basin's allocation formula and the requirements contained within its 2015 DRP. The full 2015 DRP is attached as Appendix G.

5.3.2.4 Establishing Customer Agency Allocations

West Basin first calculates each customer agency's baseline use by taking the average of total supply use (including both local and imported supplies) over the period of 2012-2014 (prior to the implementation of the DRP). The baseline is then projected forward to reflect changes in demand from population trends. This becomes the agency's allocation year demand and is shown in Figure 5-2.

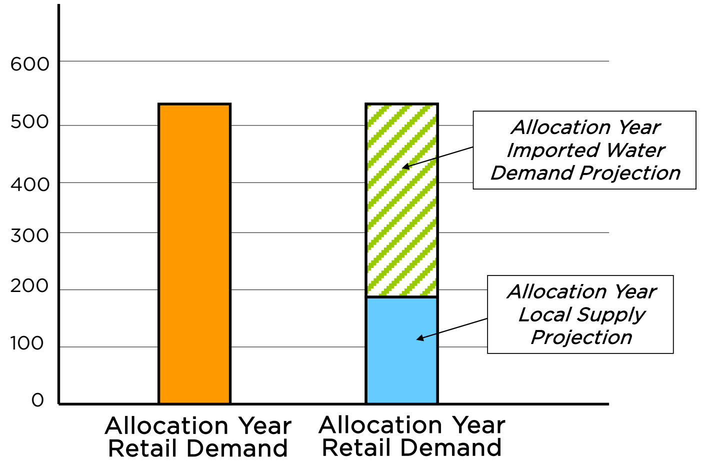


Figure 5-2: Example of Allocation Year Imported Water Demand Projection

As shown in Table 5-10 and Figure 5-3, the projected imported water demand is what is allocated according to the declared Metropolitan regional shortage level (Level 3 for the FY 2015-16 Allocation). The following concepts help explain the allocation further:

- **Regional Shortage Levels:** each level from one to ten represents a five percent increment of Regional Shortage Percentage from 5 to 50 percent.

- **Regional Shortage Percentage:** the percentage difference between available supplies and allocation year demands, in 5 percent increments from 5 to 50.

- **Wholesale Minimum Allocation:** ensures that retail agencies will not experience shortages on the wholesale level (from West Basin) that are greater than one-and-a-half times the Regional Shortage Percentage, according to Table 5-7.

Table 5-7: Example of Initial Minimum Allocation

Regional Shortage Level	Regional Shortage Percentage	Wholesale Minimum Allocation	Retail Impact Adjustment
1	5%	7.5%	2.5%
2	10%	15%	5.0%
3	15%	22.5%	7.5%
4	20%	30.0%	10.0%
5	25%	37.5%	12.5%
6	30%	45.0%	15.0%
7	35%	52.5%	17.5%
8	40%	60.0%	20.0%
9	45%	67.5%	22.5%
10	50%	75.0%	25.0%

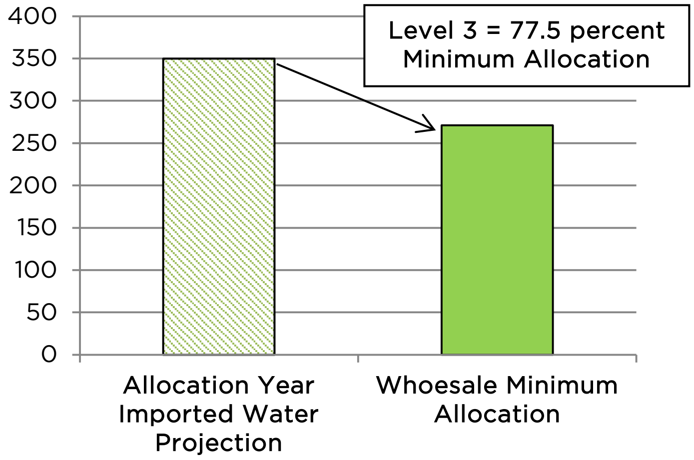


Figure 5-3: Example of Initial Minimum Allocation

Unequal impacts of an across-the-board allocation at the retail level can be dramatic depending primarily on the amount of local supplies, if any, held by each customer agency. That is why the allocation methodology assigns additional water supplies based on the following adjustments and credits:

- **Retail Impact Adjustment:** Used in Regional Shortage Level 3 and above to ensure that customer agencies with a high level of dependence on imported water do not experience disparate shortages at the retail level compared to other agencies. Agencies that are 100 percent dependent on imported water, for example, are allocated at the Regional Shortage Percentage instead of the Wholesale Minimum Percentage.

- **Conservation Demand Hardening:** Based on each customer agency's gallons per capita per day (GPCD) from a 10-year selected period's highest average, ending in years between 2004 and 2010, as compared to the 2015 GPCD. The difference in GPCD was converted to acre-feet and the regional shortage percentage and GPCD percent reduction was applied for a resulting amount of additional water given back to the agency for conservation efforts. This is consistent with requirements for SBx7-7 "20x2020" reporting. The calculation for the credit is

Credit = Conservation x (10 percent + RSL percent) x
(1 + Conservation percent) x Dependence on Metropolitan percent

RSL = Regional Shortage Level

As a member agency of Metropolitan, West Basin is provided the opportunity to request changes to its allocation through an appeals process. Likewise, customer agencies of West Basin are provided the opportunity to appeal to their individual allocations from West Basin based on new or corrected information. Grounds for requesting a change can include, but are not limited to:

- Errors in historical data used in base period calculations
- Unforeseen losses or gains in local supplies
- Extraordinary increases in local supplies
- Adjustments in credits for conservation

In some cases, West Basin has no flexibility to change a retail agency's allocation unless it results in a change to West Basin's total allocation with Metropolitan. West Basin staff will, however, work with retail agencies to determine whether appeals to Metropolitan are warranted, and if so, to prepare an appeal for review by Metropolitan (West Basin, Drought Rationing Plan, July 2015).

5.3.2.5 Allocation Penalty Rates

West Basin will enforce retail agency allocations through a penalty rate structure similar to what West Basin is subject to in Metropolitan's WSAP. Penalty rates will only be assessed to a West Basin retail customer agency if a retail customer agency exceeded its allocation under the DRP AND West Basin exceeded its allocation with Metropolitan under the WSAP. In such a case, West Basin's total penalty will be assessed to each retail customer agency that exceeded its DRP allocation on a pro-rata basis. No billing or assessment of penalty rates will take place until the end of the 12-month allocation period. Penalty rates are in addition to the base rate of water purchased.

Table 5-8 demonstrates that the penalty rate structure is an ascending block structure that provides a lower penalty for minor overuse of allocations and a higher penalty for major overuse of allocations.

Table 5-8: West Basin Allocation Penalty Rates

Usage Above Allocation	Penalty Rate
100 percent-115 percent	$1,480/AF
Above 115 percent	$2,960 AF (2 x $1,480/AF)

- Based on turf removal costs
- Turf removal saves ~44 gallons per year per square foot for 10 years
- $2/sq.ft program = $1,480 AF
- $4/sq.ft. program = $2,960 AF

5.3.2.6 Use of Penalty Revenues

According to the DRP policy adopted by the West Basin Board of Directors, any penalty funds collected by West Basin from customer agencies will be applied to any penalty owed to Metropolitan.

5.3.3 Catastrophic Supply Interruption

In the event imported water supplies are interrupted from a catastrophic event, West Basin, through coordination with Metropolitan, can respond at both a regional and a local level. In the event that an emergency such as an earthquake, system failure, or regional power outage, etc. affects the entire southern California region, Metropolitan would take the lead and activate its Emergency Operation Center (EOC). The EOC coordinates Metropolitan's and the West Basin's responses to the emergency and concentrates efforts to ensure the system can begin distributing potable water in a timely manner.

If circumstances render the Southern California's aqueducts out of service, Metropolitan's Diamond Valley Lake can provide emergency supplies for its entire service area's firm demand for up to six months. With few exceptions, Metropolitan can deliver this emergency supply throughout its service area via gravity, thereby eliminating dependence on power sources that could also be disrupted. Additionally, a contingency plan has been developed for both planned and unplanned electrical outages. It includes back-up generation for all water treatment plants, transporting mobile generators to key locations, and maintaining water supply through gravity feed in regional reservoirs (i.e. Lake Mathews, Castaic Lake, and Silverwood Lake). Furthermore, should additional supplies be needed, Metropolitan also has surface reservoirs and groundwater conjunctive use storage accounts that can be drawn upon to meet additional demands. The WSDM plan guides Metropolitan's management of available supplies and resources during an emergency to minimize the impacts of a catastrophic event.

West Basin does not own or operate any potable water facilities or transmission lines, and therefore, relies exclusively on Metropolitan and its Member Agency Response System (MARS). The MARS is a radio communication system developed by Metropolitan and its member agencies to provide an alternative means of communication in extreme circumstances. While West Basin does not have to comply with the state emergency response act as West Basin owns no potable water systems, West Basin is currently in the process of developing an emergency response plan to outline how its recycled water operations might be able to assist with limited water supplies (i.e. firefighting) when a catastrophic event hits southern California.

Section 6 Water Quality

West Basin's mission is 'to provide a safe and reliable supply of water quality to the communities we serve.' West Basin ensures that water delivered throughout its service area meets or surpasses drinking water standards set by the State Water Resources Control Board-Division of Drinking Water (DDW).

Compliance with water quality regulations is a regional water management priority and a shared responsibility. West Basin is responsible for the quality of desalination and recycled water supplies generated at the Desalter and ECLWRF and its satellite facilities: Carson Water Recycling Facility, Chevron Nitrification Plant and Exxon-Mobil Nitrification Plant. Metropolitan is responsible for complying with state and federal drinking water regulations on its imported potable water sold to West Basin. West Basin's retail customer agencies are responsible for ensuring compliance in their individual distribution systems and at the customer tap. As a result of these measures, there are no anticipated water quality impacts that will decrease the supply available for use.

6.1 Imported Water

West Basin's imported water comes from the SWP and Colorado River via Metropolitan pipelines and aqueducts. Metropolitan is proactive in its water quality efforts, protecting its water quality interests through active participation in the regulatory arena and using treatment processes that provide the highest water quality from both sources. Metropolitan has one of the most advanced laboratories in the country where water quality staff can examine the efficacy of existing treatment by performing tests and reviewing results as well as researching new treatment technologies. 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 (TDS) and lower levels of organic matter, conversely the SWP contains a lower TDS, but 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 provides updated treatment processes to decrease the formation of disinfection byproducts. 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 (PPCPs). 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.

6.1.1 Source Water Protection

Source water protection is the first step in a multi-barrier approach to provide safe and reliable drinking water. In accordance with California's Surface Water Treatment Rule, Title 22 of the California Code of Regulations, DDW requires large utilities delivering surface water to complete a Watershed Sanitary Survey every five years to identify possible sources of drinking water contamination, evaluate source and treated water quality, and recommend watershed management activities that will protect and improve source water quality. The most recent sanitary surveys for Metropolitan's water sources were completed in 2010 and 2011. The next Sanitary Surveys for the watersheds of the Colorado River and the SWP will report on water quality issues and monitoring data through 2015. Metropolitan has an active source water protection program and continues to advocate on behalf of numerous SWP and Colorado River water quality protection issues.

6.1.2 DWR SWP Water Quality Programs

Metropolitan supports DWR's policies and programs aimed at maintaining or improving the quality of SWP water delivered to Metropolitan, especially the ability to govern the quality of non-project water conveyed by the California Aqueduct. In addition, Metropolitan has supported the expansion of DWR's Municipal Water Quality Investigations Program beyond its Bay-Delta core water quality monitoring and studies to include enhanced water quality monitoring and forecasting of the Delta and SWP. These programs are designed to provide early warning of water quality changes that will affect treatment plant operations both in the short-term (hours to weeks) as well as seasonally. The forecasting model is currently suitable for use in a planning mode. It is expected that with experience and model refinement, it will be suitable to use as a tool in operational decision making.

6.1.3 Water Quality Exchanges

Metropolitan has implemented selective withdrawals from the Arvin-Edison storage program and exchanges with the Kern Water Bank to improve water quality. Although these programs were initially designed to provide dry-year supply reliability, they can also be used to store SWP water at periods of higher water quality for withdrawal at times of lower water quality, thus diluting SWP water deliveries.

Although, elevated arsenic levels have been a particular concern with groundwater banking programs. However, there are short-term water quality benefits that can be realized such as groundwater pumped into the California Aqueduct with lower total organic carbon (TOC) levels, lower bromide levels, and lower TDS.

6.1.4 Water Supply Security

Changes in national and international security have led to increased concerns about protecting the nation’s water supply. In coordination with its member agencies, Metropolitan added new security measures in 2001 and continues to upgrade and refine procedures. Metropolitan increased the number of water quality tests conducted each year to over 300,000 analytical tests on samples collected within its service area and source waters and developed contingency plans that coordinate with the Homeland Security Office’s multicolored tiered risk alert system.

6.2 Groundwater

Although West Basin does not serve traditional groundwater supplies, it works to support its retail agencies and WRD to protect and promote the quality of groundwater supplies within its service area. For details pertaining to the WCGB, refer to WRD’s most recent Engineering Survey and Report.

6.2.1 West Basin and Customer Retail Agency Programs

As part of West Basin’s customer service, the Water Quality Department works closely with regulatory agencies to assist retail agencies in meeting State and Federal drinking water regulations through the *Cooperative Basin-Wide Title 22 Groundwater Quality Monitoring Program*. Title 22 refers to the section of the California Code of Regulations pertaining to both domestic drinking water and recycled water standards.

This voluntary program offers water quality testing to retail agencies. Two agencies in West Basin’s service area participate in the monitoring program. West Basin’s water quality staff coordinates wellhead and reservoir water quality testing at approximately six groundwater wells in the service area and a contract laboratory provides sampling as well as analytical and reporting services. Laboratory results are reported to West Basin, retail agencies, and the DDW. The program helps retail agencies save time and expense while providing a valuable service for public health.

The program also provides for the production of an annual Customer Water Quality report upon request of West Basin's retail agencies. The Customer Water Quality Report is required by State and Federal law and West Basin's water quality staff has prepared them for several agencies for over 15 years.

6.2.2 Water Replenishment District Programs

As the regional groundwater management agency for the Central and West Coast Groundwater Basins, WRD has several active programs to monitor, evaluate and mitigate water quality issues.

Groundwater can become impaired through leaching of contaminants into an aquifer, or by excessive concentrations of naturally-occurring constituents that impact quality, such as arsenic. Surface water sources become contaminated from human activities in the watershed or through deliberate contamination.

Groundwater Quality Program: WRD continually evaluates current and proposed water quality compliance in agency production wells, monitoring wells, and recharge/injection waters of the WCGB. If non-compliance is identified, WRD staff develops a recommended course of action and associated cost estimates to address the problem and to achieve compliance. WRD also evaluates the impacts of pending drinking water regulations and proposed legislation.

Regional Groundwater Monitoring Program: This program has a network of over 250 WRD and USGS-installed monitoring wells at nearly 50 locations throughout West Basin's service area. Monitoring well data is supplemented with information from production wells to capture the most accurate data available. WRD staff, comprised of certified hydrogeologists and registered engineers, provides the in-house capability to collect, analyze and report groundwater data. This information is stored in WRD's GIS database and supports a better understanding of the characteristics of the Central and West Coast Groundwater Basins.

Safe Drinking Water Program: This program promotes the cleanup of groundwater resources at specific well locations. By installing wellhead treatment facilities at existing production wells, WRD hopes to remove contaminants from the underground supply and deliver the extracted water for potable purposes. WRD works directly with well owners on the projects implemented through this program. It currently focuses on the removal of volatile organic compounds (VOCs) and offers financial assistance for the design of and equipment for the selected treatment facility.

WRD provides extensive information on groundwater quality in its Engineering and Survey Reports as well as Regional Groundwater Monitoring Reports. Both reports have a section devoted solely to groundwater quality management, and can be accessed through WRD's website, www.wrd.org (WRD, Regional Groundwater Monitoring Report, February 2015).

6.3 Brackish Desalination

Although construction of seawater barriers was effective in halting the intrusion of seawater into the WCGB, historic plumes of brackish water still remain in the WCGB behind the barriers. In the early 1990s, West Basin completed the C. Marvin Brewer Desalter facility as a demonstration project for removing and treating the brackish water using two existing drinking water wells that were impacted by the seawater intrusion. In 2005, those two wells were replaced with a new, more productive well. This well has the capability to pump 1,600 to 2,400 AFY of brackish groundwater to be treated at the desalting facility for use by West Basin's retail agency, California Water Service.

Since 2002, WRD has also been operating the Robert W. Goldsworthy Desalter, located adjacent to West Basin's desalter. Product water from the Goldsworthy Desalter is delivered for potable use to the City of Torrance's water distribution system. Since 2001 it has been removing 2.3 MGD of brackish groundwater from the WCGB. This desalter will soon begin its second phase, increasing its capacity to 5 MGD. By mid-2017, the desalter will be purifying nearly two billion gallons of local water per year.

6.4 Recycled Water

West Basin's Edward C. Little Water Recycling Facility (ECLWRF), located in El Segundo, has been in continuous operation since 1995 and has conserved over 170 billion gallons of imported water by serving reliable supplies of recycled water for a wide variety of non-potable uses. A full description of West Basin's recycled water program is provided in the Water Recycling section (Section 9) of this report.

West Basin is committed to monitoring and maintaining the high quality of recycled water produced for injection at the West Coast Seawater Barrier and the surrounding groundwater from migrating contamination sources. Groundwater quality within the aquifer is monitored through more than a dozen monitoring wells inland of the Barrier. These wells represent the quality of the groundwater down-gradient of the Barrier and are essential in providing critical water quality data for the surrounding groundwater. Annual water quality data reports and groundwater modeling reports are submitted to both the DDW and the Los Angeles Regional Water Quality Control Board to ensure compliance and security.

6.5 Ocean Water Desalination

West Basin has been actively researching the feasibility of an ocean water desalination program as part of the drinking water supply. From 2002 to 2009, West Basin operated the Desalination Pilot Project, which marked the first use of microfiltration as a pretreatment to reverse osmosis for ocean water desalination.

To ensure that this process was effectively treating the ocean water, West Basin performed extensive water quality research at the pilot plant. The water produced at the pilot project had a lower salt concentration than does typical tap water in southern California, with 350 parts per million (ppm). The pilot project's analytical test results indicated that the quality of the desalinated ocean water meets current State and Federal drinking water standards set by DDW and the Environmental Protection Agency (EPA). Along with 500 monthly analytical tests, additional water quality studies were completed under the auspices of the American Water Works Association Research Foundation.

The research and testing conducted at the pilot project informed the design of the Ocean Water Desalination Demonstration Facility, dedicated in November 2010. The Demonstration Facility operated for four years, enabling West Basin to evaluate the feasibility of permitting and siting of a full-scale desalination plant capable of providing 20,000 AFY of potable water, enough to supply 40,000 families for a year.

While the Demonstration Facility was operational, West Basin pursued a program master plan in partnership with Metropolitan. The master plan effort evaluated all water quality and other aspects necessary to develop a full-scale desalination facility with the option of integrating product water into the Metropolitan distribution system. More information on West Basin's ocean water desalination efforts is included in Section 10.

6.6 Research and Development

West Basin has a dedicated program and budget to selectively engage in research projects that evaluate water quality, efficient operations and new pollution prevention technology and methods. Research projects close the environmental loop by addressing both final product water as well as source control issues to prevent pollution and the need for cleanup technology. West Basin leverages its research dollars by participating on the Boards of water industry research organizations such as WateReuse, American Water Works

Associations, National Water Research Institute, and the Salinity Management Coalition, as well as participating with academic institutions in water quality research.

6.7 Effects on Water Management Strategies

Retail water agencies in densely populated southern California are acutely aware of the economic impact of water quality on a public water system. Management strategies must be developed to maintain a safe, reliable supply at reasonable cost without jeopardizing water quality and public health. Water quality is maintained through operational practices that can include wellhead treatment for contaminated groundwater sources, or blending down contaminated groundwater with purchased imported surface water from Metropolitan or high quality groundwater from adjacent purveyors.

6.8 Effects on Supply Reliability

Poor water quality makes a water source unreliable, affects overall supply and increases the cost of serving water to the public. More importantly, it results in a loss of customer confidence, which is difficult to overcome even after water quality is restored. A water source that fails drinking water regulations must be taken out of service. The source can be restored through treatment or other management strategies.

Section 7 Water Use Efficiency

Water Use Efficiency (WUE) and conservation continues to play a foundational role in West Basin's water supply portfolio. Between the years of 2010 and 2015, the state of California experienced a severe four year drought that is continuing into a fifth year.

The drought conditions were so severe that in 2014 California Governor Edmund G. Drown Jr. mandated a statewide 25% water reduction and in 2015, the SWRCB implemented mandatory monthly water reporting in order to track the water reductions of each water retailer.

West Basin's customer agencies have achieved an overall total reduction of 19% water conservation for the period June 2015 to February 2016 as compared to the same months in 2013. The total reduction has fluctuated over time but significant efforts have been made by the customer agencies to meet the mandatory conservation standards. The melded average conservation target for the West Basin customer agencies is 20%. In February 2016, and effective March 2016, the State Water Board adjusted the conservation standards for many retailers throughout the state, including four of West Basin's, which provided some latitude in the conservation requirements they must meet. The revised regulation responds to calls for greater consideration of certain factors that influence water use in different parts of the state, including hotter-than-average climate, population growth, and significant investments in new local, drought resilient water sources such as wastewater reuse and desalination.

The four customer agencies that received an adjustment in their conservation standard was a direct result of credit received for the advanced treated recycled water injected to replenish the groundwater supply used by many of our customer agencies, in the form of reduced conservation targets. These customer agencies include California Water Service – Hermosa/Redondo, Golden State Water Company – Southwest, and the Cities of Inglewood and Manhattan Beach.

7.1 Historical Water Conservation Efforts

Since the drought of the early 1990s, West Basin has been a leader in implementing aggressive water conservation programs to help limit water demand within its service area. From 1990 through 2015, the state has experienced several long-term droughts, with the most recent drought occurring from 2010-2015.

During this period, West Basin has continued to provide a strong emphasis on plumbing retrofit hardware, education, distribution of devices and a stronger message on conserving water outdoors. West Basin has also implemented several new innovative programs such as the distribution of free rain barrels and offering free greywater workshops to the public. The results of these programs, in conjunction with passive conservation measures such as modifications to city ordinances, have resulted in significant reductions in retail water use within West Basin's service area.

According to the Metropolitan's conservation tracking model, a total of 28,512 AF of imported water has been conserved in 2015 in the West Basin service area. A summary of the current and projected conservation savings is shown in Tables 7-1 and 7-2 below:

Table 7-1: Metropolitan Demand Forecasting Model for Water Conservation – West Basin AF Savings and Future Projections (AF)

Conservation	2015	2020	2025	2030	2035	2040
Active	3,711	4,279	3,226	2,192	1,601	1,036
Passive	15,943	18,598	21,015	23,213	24,569	26,064
Price	6,675	6,861	8,256	9,701	11,177	12,662
System Losses	2,184	2,542	2,693	2,823	2,908	3,011
Total	28,512	32,280	35,190	37,928	40,255	42,773

Table 7-2: Metropolitan Demand Forecasting Model for Water Conservation – Includes MWELO Savings (AF)

Conservation	2015	2020	2025	2030	2035	2040
Single-Family	122	330	349	463	548	455
Multi-Family	25	78	145	173	183	206
CII	130	141	197	234	195	264
Total	276	550	691	870	926	925

Metropolitan's assumptions are:

1. Active – Devices installed as of end of 2016 (based on the 2-year conservation budget of $450 million);
2. Passive – Savings described in the MWELO;
    a. Used demographic and employment data consistent with retail demand forecast;
    b. Assumed savings from MWELO for new home construction up to 50% and 0% for existing homes;
3. Price savings – Based on retail demand econometric model; and
4. System Losses – Savings from reduced demands due to conservation.

By current estimates, demand management from West Basin and its water retailers saved over nine billion gallons of imported water (28,512 AF) in 2015, which is equivalent to the average annual water use of 57,000 households.

West Basin's conservation efforts have been comprised of a wide array of cost-effective programs that contribute to conserving water, improving water quality, reducing energy, reducing imported water needs and increasing the region's water supply reliability. The effect of water conservation is defined by two main elements: active and passive. Active conservation is water savings produced from incentive based programs, such as rebate programs, giveaways, and retrofits. Passive conservation is water savings produced from building and plumbing codes, consumer behavioral changes, and response to price shifts.

West Basin prides itself in the partnerships it has created with federal, state, and local entities to offer water efficiency programs. By developing integrated programs with its partners, West Basin has been able to leverage funding and resources to provide effective programs throughout its service area. As a result, West Basin has been successful in obtaining more than $1.2 million in local, state and federal grant funds for conservation programs since 2010. Due to its successes in acquiring grants, West Basin leveraged its funding and in 2015 provided $3 worth of programs to the public for every $1 it invested.

In addition, West Basin actively promotes Metropolitan's water conservation programs and incentives. From 2010-2015, Metropolitan provided nearly $5.6 Million in rebate money to West Basin residents (including $4.9 Million for turf removal alone) and nearly $2.5 Million to West Basin commercial customers (including $1.8 Million for turf removal alone).

West Basin's current conservation programs target water efficiency and conservation efforts in the residential, commercial, industrial, institutional and landscape sectors. These programs were identified as part of the 2010 Water Use Efficiency Master Plan and were made available to residents, businesses, and institutional customers within West Basin's service area.

Figure 7-1 below shows the total Active and Passive Savings from 1990 to 2015 on an annual basis. This does not include assumptions for price effect, system losses or water savings attributed to rebates received by Metropolitan. This data only includes savings from programs directly implemented by West Basin.

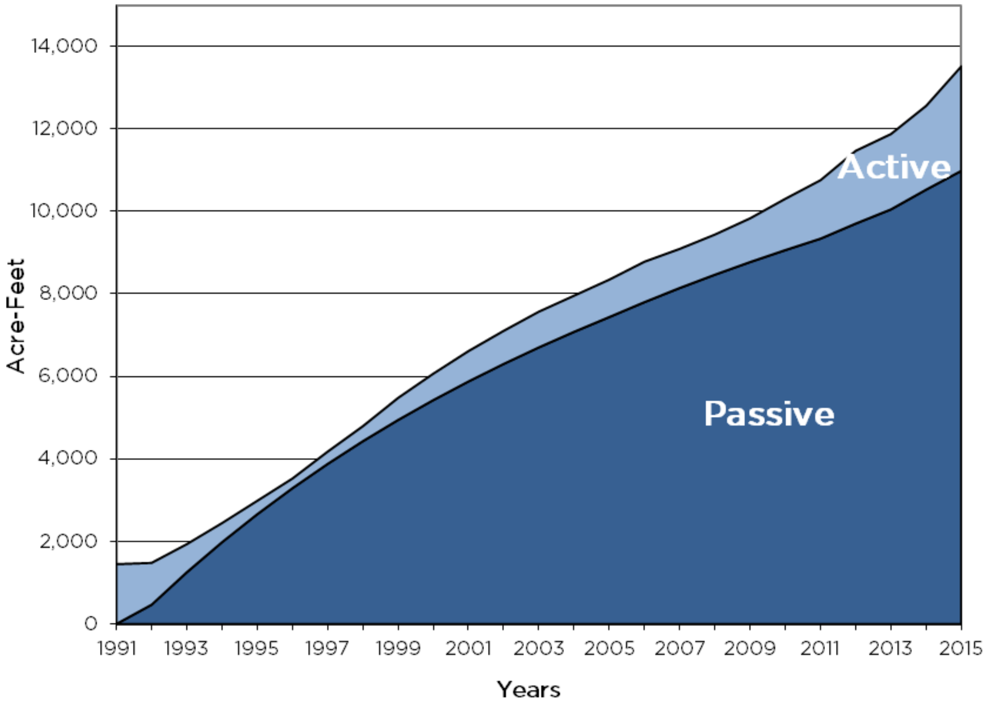


Figure 7-1: West Basin Water Use Efficiency Program Water Savings (1990 – 2015)

7.1.1 Grant Funding

West Basin has been successful in obtaining several water use efficiency grants over the last five years. These awards are shown in Table 7-3.

Table 7-3: Water Use Efficiency Grants Awarded

Awarding Agency / Program	2010	2011	2012	2013	2014	2015	Total
Metropolitan Water District of Southern California							
Smart Landscape Expo	$2,000	$2,000					**$4,000**
Water Harvest Festival		$2,000	$2,000		$2,000		**$6,000**
Department of Water Resources							
Complete Restroom Retrofit – Phase II	$296,250						**$296,250**
Water and Energy in the Hotel / Motels and School Sector	$452,880						**$452,880**
United States Bureau of Reclamation							
Landscape Irrigation Efficiency Program (LIEP)		$100,000					**$100,000**
Regional Landscape Water Use Efficiency (Turf Removal)						$300,000	**$300,000**
2016 Water Use Efficiency Master Plan						$60,000	**$60,000**
California Native Plant Society							
Hermosa Beach Demonstration Garden					$8,000		**$8,000**
Total	**$751,130**	**$104,000**	**$2,000**	**$-**	**$10,000**	**$360,000**	**$1,227,130**

7.2 West Basin and Retail Agency Water Use Efficiency Master Plans

In 2006, West Basin developed its first Water Use Efficiency Master Plan (Plan) and in 2010, updated this Plan with the help of a USBR grant. The Plan included a five year timeline for cost-effective program implementation. Since adoption of the Plan, West Basin has been successfully implementing the programs shown above.

These programs have helped keep water demand steady as the population continues to grow in West Basin's service area, as discussed in Section 3.

7.3 External Agency Coordination

As a part of conservation planning and implementation, West Basin also works with other regional and statewide agencies and groups such as the Alliance for Water Efficiency (AWE), Metropolitan, and the CUWCC.

7.3.1 Metropolitan Water District

In 2015, Metropolitan began a process to update its Integrated Resources Plan (IRP) that includes a strong commitment to water conservation. Metropolitan's 2015 IRP establishes water supply targets for southern California through 2040, specifically a conservation target of 1,519,000 AF. This target represents Metropolitan's goal of achieving a 20% reduction in per capita water use across its service area. Metropolitan is currently developing a long-term conservation plan to implement the IRP conservation target. This plan focuses on conducting more research, providing device incentives and funding, assisting with market transformation and legislation and helping to support its member agencies with water conservation efforts.

As a member agency of Metropolitan, West Basin actively participated in both the IRP Working Group and the Long Term Conservation Plan development, and will benefit from the conservation implementation strategies outlined in the plan. Metropolitan has completed its 2015 updated IRP.

7.3.2 California Urban Water Conservation Council

In 1991, the CUWCC was created to increase water use efficiency by integrating urban water conservation BMPs into the planning and management of California water agencies. It is a partnership of agencies and organizations concerned with water supply and conservation of natural resources in California.

To encourage water use efficiency, the CUWCC asked water agencies and organizations to sign a Memorandum of Understanding (MOU) regarding urban water conservation in California, which committed participating urban water suppliers to use their "good faith efforts" to implement the CUWCC's two wholesale BMPs.

West Basin was one of the first urban water suppliers to sign the CUWCC's MOU. Every two years, water agency signatories, including West Basin, must submit their BMP reports to the CUWCC. West Basin has submitted BMP Wholesaler Water Agency Reports to the CUWCC that detail West Basin's progress in implementing the two BMPs as currently specified in the MOU. In Appendix H, West Basin has attached its most recent FY 2013-14 CUWCC Report.

7.4 CUWCC – New BMPs and Reporting Options

In 2015, the CUWCC completed an ambitious project to revamp, streamline and improve its 14 BMPs and to develop several ways that an agency can report its water conservation targets and savings. Along with this process, the

CUWCC created a new reporting database that agencies may use to report their achievements.

Wholesale agencies are required to report Foundational BMPs including the following:

BMP 1: Utility Operations

Water utilities throughout California are implementing water conservation programs and providing essential services to their retailers. Water conservation includes traditional demand management measures, but also includes important utility-management based conservation measures. An important component of utility water conservation is assessing the efficiency of how water is delivered to retailers. There are four subcategories that comprise signatory utility operation program responsibilities: 1. Operational Practices; 2. Water Loss Control; 3. Metering and Billing; and 4. Retail Conservation Pricing.

BMP 2: Public Education and School Education

Public information programs inform customers and other stakeholders about water resources so they understand why it is important to use water wisely. Effective programs also engage listeners in water-efficient behaviors so they make life-long changes in how they use water. Water conservation education, especially for school-aged children, can encourage a lifelong understanding of and commitment to responsible use of water.

Due to new legislation and new water reporting requirements established by the SWRCB and DWR, the CUWCC continues to evolve from a reporting agency to an educational and resource organization.

7.5 Current and Future Water Conservation Programs

As the water wholesaler for eight water retail agencies and one groundwater agency, West Basin has collaborated with many important stakeholders and leveraged funding to develop and implement cost-effective programs that conserve water and energy, reduce runoff and provide other important environmental benefits.

In 2013, the water industry began a market transformational shift from indoor plumbing devices to outdoor water conservation because up to 50% of water is used outdoors to irrigate landscapes. However, there are still opportunities available for indoor plumbing improvements and rebates for residential high-efficiency toilets and high-efficiency clothes washers were made available by Metropolitan during the period of 2010-2015.

In FY 2013-14, Metropolitan began offering higher incentives for turf removal. The payment started with \$0.30 ft^2 in 2013, but that did not achieve a significant response, so in 2014 Metropolitan raised the incentive to \$1/ft^2 and in 2015 it was raised again to \$2/ft^2. The higher incentive motivated many residents to replace their water-intensive turf with less demanding native plants.

7.5.1 Current Programs

Between the period of 2010-2015, West Basin and its partners offered the following programs:

Cash for Kitchens

West Basin continues to partner with the South Bay Cities Council of Governments (SBCCOG) and its South Bay Environmental Services Center (SBESC) to offer a program called, “Cash for Kitchens” for commercial kitchen facilities in the South Bay portion of our service area. Food service customers receive combined water and energy assessment and training materials for employees. Sites may also qualify to receive high-efficiency device upgrades such as pre-rinse kitchen sprayers, faucet aerators, flow restrictors and waterbrooms. The SBESC coordinates and conducts site visits with Southern California Gas Company commercial service technicians to provide a comprehensive water and energy review for the customers they visit.

In 2015 West Basin hired a company to provide the Cash for Kitchen surveys in West Basin’s Division IV, which includes the cities of Malibu, Culver City, West Hollywood, El Segundo and the Los Angeles County unincorporated area of Marina del Rey and Topanga. With the addition of Division IV, the program is now available to all customers in the West Basin service area.

Commercial Restroom Retrofit

The Commercial Restroom Retrofit program provided qualifying businesses, schools, restaurants and other commercial and public facilities with installation of High Efficiency Toilets (HETs), urinals and flow restriction devices to increase water-use efficiency in the non-residential sector.

Greywater Workshops

In 2015, West Basin, with the assistance of grant funding from DWR and the CUWCC, piloted its first ever greywater workshop. West Basin hired a non-profit organization called Greywater Action to provide residents with two free greywater workshops. These workshops taught residents how to redirect and reuse their clothes washer machine water into their landscape in a safe and legal manner.

High-Efficiency Toilet (HET) Distribution Program

In 2015, legislation was passed that mandates the use of toilets that are 1.28 gallon per flush or less. With funding contributions from Metropolitan and several member agencies, West Basin provided free HETs through several one-day toilet distribution events. The annual goal was to distribute 2,000 HETs, estimated to conserve more than 26 million gallons of drinking water per year.

Landscape Irrigation Efficiency Program (LIEP)

The LIEP program provides free water audits for customers. Funded by the United States Bureau of Reclamation (USBR), the LIEP program includes a site survey or evaluation, a list of recommended improvements and repairs, a recommended water budget and schedule, and water efficient rotating sprinkler nozzles.

Ocean-Friendly Landscape Program

In 2006, West Basin received a Proposition 50 grant from DWR to implement a comprehensive program called the Ocean-Friendly Landscape Program. Since 2006, this program has provided the public with the resources, education, devices and rebates to conserve water used in outdoor landscaping. This program is anticipated to end in December 2016 when the funding is exhausted. The components of this program are described below.

- **Ocean-Friendly Demonstration Gardens**
  West Basin has worked with its cities and schools to construct 12 Ocean Friendly Demonstration Gardens to date. Four additional gardens are expected to be completed by the end of 2016. These gardens provide great examples of how California-friendly landscapes can conserve water, reduce runoff, reduce turf waste and pollution and also provide benefits to local wildlife, birds and insects.

- **California Friendly Landscape Classes and “Hands-On-Workshops”**
  During the period of 2010-2015, West Basin worked closely with the SBCCOG, its cities and water retail agencies to implement over 30 California Friendly Landscape Classes and Ocean-Friendly Garden “Hands-on-Workshops” to teach residents how to construct a water-conserving garden. West Basin used the opportunity of constructing the gardens to also have a trained professional teach residents how to install the water conserving plants and drip irrigation.

- **Ocean-Friendly Landscape Program – Smart Irrigation Controllers**
  As part of the Ocean-Friendly Landscape Program, West Basin provides rebates and exchange programs for smart weather-based irrigation controllers to residents. In addition, these controllers have been installed at large landscape sites, such as parks, schools and city facilities throughout the West Basin service area.

Ocean Safe Car Wash Program

Ocean Safe Car Washes clean and recirculate their water to use 50-85% less than the average home car wash and help prevent runoff from entering the ocean. These car washes provide discount coupons to customers.

Rain Barrel Distribution Programs

In 2013, with the financial support of Metropolitan, West Basin piloted its first rain barrel distribution event. The event was a huge success and in 2014, West Basin conducted five events, one in each of its five Divisions, in which 1,000 rain barrels were distributed to the public. In 2015, West Basin doubled the quantity to 2,000 rain barrels. These rain barrels were re-purposed food barrels that were sterilized and converted to be functional and safe.

Recirc And Save

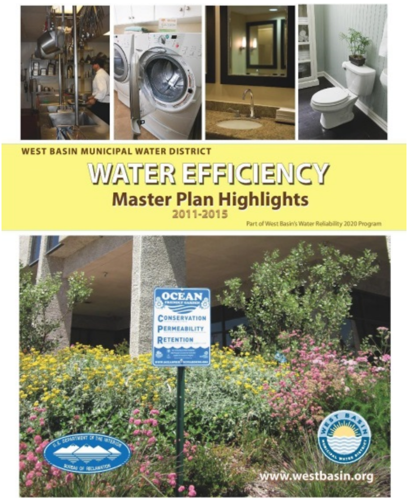
West Basin offered audits and performance incentives for industrial process improvement and cooling tower efficiency. This program is designed to help industrial water users involved in manufacturing and facilities that have cooling towers save water by improving the efficiency of their systems.

Smart Landscape Expo

The Smart Landscape Expo was held in 2010 and 2011 and was conducted at the ECLWRF. It featured two classroom workshops, two hands-on demonstrations, tours of the water recycling facility, and self-guided tours of the demonstration garden. There were 20-25 vendors including irrigation equipment vendors, water agencies and information booths as well as a native plant sale with local nurseries selling plants that could be found in the demonstration garden.

Turf Removal Rebates

In 2015, West Basin was able to add an additional $\$1/\text{ft}^2$ to the Metropolitan incentive of $\$2/\text{ft}^2$ through a grant received by USBR. The $\$3/\text{ft}^2$ rebate incentive for turf removal was a very successful program and funding only lasted for a few months.



Water Efficient Rebates

During this period Metropolitan, with support from West Basin and the local water retailers, provided rebates to encourage the public to purchase and install water efficient devices.

Water Efficiency Master Plan

In 2010, West Basin updated its first Conservation Master Plan (now the "Water Efficiency Master Plan") in collaboration with its retail agencies to develop programs to save additional water through 2015. The 2010 Plan showed the results and the lessons learned since the Plan was first developed in 2005. Funding for the planning effort was provided by USBR and required a 1:1 match from each retail agency.

The 2010 Plan was a framework for establishing a mix of conservation programs to comply with the California state legislation requiring a 20 percent reduction of urban water consumption by the year 2020 as well as to achieve West Basin's own 2020 goals. The 2010 Plan will be updated in 2016 through a new competitive grant received by USBR.

With the help of these programs, it is estimated that West Basin has distributed and installed over 300,000 water saving devices from 1990 to 2015, with the most recent five years shown in Table 7-4.

Table 7-4: West Basin Distribution of Water Saving Activities

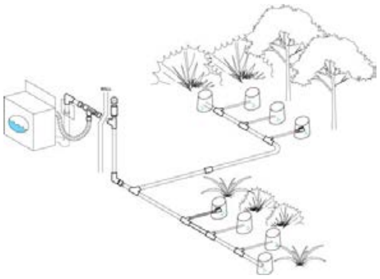
MEASURE/PROGRAM	2010	2011	2012	2013	2014	2015	Totals
Cash for Kitchens							
Flow Restrictors	38	38	38	38	38	1,091	**1,281**
Pre-Rinse Spray Valves	34	36	31	15	34	34	**184**
Waterbrooms	27	27	27	27	27	-	**135**
Commercial Restroom Retrofit							
HET Direct Install	575	1,041	352	1,176	375	62	**3,581**
Urinal Direct Install	20	352	1	100	-	20	**493**
Greywater Program							
Workshops	-	-	-	-	-	3	**3**
HET Distribution Events							
High Efficiency Toilets	2,000	2,000	2,000	1,500	1,500	-	**9,000**
Landscape Irrigation Efficiency Program (LIEP)							
Residential Landscape Surveys	200	-	200	84	200	200	**884**
Residential Rotating Irrigation Nozzles	1,082	-	5,000	5,364	500	15,418	**27,364**
Large Landscape Audits	0	-	200	101	200	200	**701**
Ocean Friendly Landscape Program							
Smart Residential Irrigation Controllers	225	225	-	100	200	261	**1,011**
Large Landscape Controllers	200	200	200	200	200	200	**1,200**
Turf Removal	-	-	-	-	100,000 ft^2	300,000 ft^2	**400,000 ft^2**
Demonstration Gardens	-	1	1	3	5	2	**12**
California Friendly Landscape Classes & "Hands-on-Workshops"	5	6	6	5	4	5	**31**
Rain Barrel Distribution Events							
Rain Barrels	-	-	-	200	1,000	2,000	**3,200**
Recirc & Save							
PH Controllers	1	3	3	8	4	1	**20**
Water-Efficient Rebates							
High Efficiency Toilets	-	-	-	-	-	9,440	**9,440**
High Efficiency Clothes Washer Rebates	-	-	-	-	-	800	**800**

7.5.2 Future Programs

In 2016, West Basin will update its Water Use Efficiency Master Plan that will evaluate potential programs to be considered for implementation. For example, West Basin would like to continue to expand the following two existing programs:

Rain Barrel Events - West Basin will continue to provide residents with free rain barrels through one day distribution events. A new $300 rebate has been provided by Metropolitan for cisterns that hold 200 or more gallons of water. West Basin plans on promoting these larger cisterns starting in 2016.

Greywater Workshops - In 2015, West Basin launched its first greywater pilot workshop and in 2016, West Basin plans on offering several greywater workshops to teach residents how to create a safe and legal Laundry-to-Landscape (L2L) greywater system.



Comprehensive Water Conservation Program - In 2015, West Basin, as a longtime member of the Malibu Area Conservation Coalition (MACC), partnered with the City of Malibu and the local water retailer, Los Angeles County Waterworks District #29, to develop the Comprehensive Water Conservation Program. These partners will implement the program beginning in 2016. The program components include:

- Free one-on-one consultations to educate and motive residents to make changes; and
- A suite of incentives and rebates for available water conservation measures.

7.5.3 Other Conservation, Education and Outreach Programs

Public Information Programs

West Basin uses many strategies to help promote its free water education programs to the public and is very active in the community. West Basin developed and launched its Water Reliability Program to reduce dependence on imported water and increase drought-proof, locally-controlled water supplies. West Basin strives to achieve this imported water reduction goal by continuing to maximize its water recycling, conservation and groundwater replenishment programs, as well as evaluating responsible ocean water desalination as a future drinking water supply. As part of the Water Reliability Program, West Basin offers the conservation and water education related programs described below.

Water Reliability Program – Speakers Bureau

Each year West Basin hosts presentations to local community groups that have included city councils, service clubs, chambers of commerce and others. The presentations provide information on current and future water supply challenges and what West Basin is doing to meet those demands through its

Water Reliability Program. More than 10,000 people have pledged their support for the Program as it continues to grow.

Imported Water Supply Tours

West Basin, in cooperation with Metropolitan, provides inspection tours of the Colorado River Aqueduct and the State Water Project to legislators, local elected officials, retail water agency staff, and the general public at various times throughout the year. The purpose of the trips is to give local decision-makers a better understanding and appreciation of the water supply issues impacting the region.

Water Harvest Festival

In October 1999, West Basin began its first annual Water Harvest Festival in El Segundo. West Basin invites the community to learn about the value of water in a fun, family-friendly atmosphere that includes informational booths, shows, games, tours and contests. The event features local agencies, community groups, and water conservation vendors that provide the public with information about water-saving devices, rebates, and programs. West Basin provides free tours of its water recycling facility and demonstrates how wastewater is purified into usable recycled water. This free event attracts thousands of visitors each year.

Water Recycling and Ocean Water Desalination Tours

Once a month, West Basin provides the public with a water recycling and ocean water desalination tour at its Edward C. Little Water Recycling Facility. Visitors learn about the water purification process at the only facility in the world that produces five designer waters and see wastewater purified to drinking water quality in 20 minutes. Ocean water desalination tours provide information about Southern California's water supply and how West Basin is safely researching ocean water desalination to diversify its water supply portfolio while protecting the marine ecosystem.

Media Outreach

West Basin maintains a strong link with local news media through press releases, social media, community events, one-on-one tours and talks, and small group briefings to inform them about West Basin's ongoing activities in providing a safe and reliable supply of high-quality water to the communities it serves.

School Education Programs

West Basin provides free water education programs to youth, ages elementary through high school, in its service area. Program topics include the origin of our water supply, water conservation, and environmental issues. All education programs are grade specific and incorporate California's Common Core Standards. The goal of these award-winning programs is to inspire students to become water ambassadors in our local communities. Descriptions of each program can be found in the following section.

7.6 Current and Future Education Programs

West Basin is dedicated to working with Metropolitan and its retail agencies to provide water conservation educational opportunities for the communities they serve. West Basin manages and supports several innovative water education programs that are offered for free to public and private schools in its service area.

7.6.1 Current Programs

Solar Cup

Solar Cup is an annual solar-powered boat building and racing competition held for high school students in Southern California. The goal of the seven-month program is to encourage students to learn about science, mathematics, water quality issues, conservation, and alternative energy and fuel sources. This year, Metropolitan, the lead sponsor of the program, allowed member agencies, including West Basin, to sponsor three teams. In 2015, the West Basin sponsored teams were divided into veteran and rookie teams.

- Veteran Teams
    - Environmental Charter High School, Lawndale
    - California Academy of Math and Science, Carson
- Rookie Team
    - Lennox Math, Science and Technology Academy, Lennox

Water is Life Student Art Contest

This program encourages 3rd -12th grade students to learn about their water supply and design a water conservation slogan illustrated with original artwork. Grand prize and honorable mention winners in the elementary, middle and high school categories receive an iPad through the generous support of Suez Water and the Law Offices of Lemieux and O'Neill.

Water Educators Newsletter

West Basin keeps in touch with educators and administrators regarding our programs through our quarterly newsletter *Waterworks*.

Water Treatment Facility School Tours

West Basin offers a free field trip experience for 3rd - 12th grade students to visit the ECLWRF in El Segundo and the Water Education Center and Temporary Ocean Water Desalination Facility in Redondo Beach. During these field trips, students interact with water supply and conservation exhibits that teach them about water efficiency and water stewardship. The students are then taken to visit a local community aquarium to learn how local marine life is protected by West Basin's environmentally sustainable water treatment processes. Table 7-5 shows the number of students who participated in these tours over the past five years.

Table 7-5: School Tours at Water Treatment Facilities

Grade Level	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	Total
Grades K-3rd	901	1,548	1,937	1,752	2,593	8,731
Grades 4th-6th	4,547	3,579	3,831	3,992	2,795	18,744
Grades 7th-8th	585	146	391	1,130	572	2,824
High School	113	361	68	327	412	1,281
Total	**6,146**	**5,634**	**6,227**	**7,201**	**6,372**	**31,580**

Water Star Program

West Basin's Water Star Program encourages students to save 20 gallons a day, reducing the region's dependence on imported water and reducing runoff to the ocean. Students receive a water star conservation kit complete with fix-it tickets, a five-minute shower timer, and water-saving tips. More than 10,000 students received Water Star kits during the 2013-2015 school years.

Surfrider Foundation Teach and Test Program

The Surfrider Foundation South Bay Chapter's Teach and Test Program is an exciting project pairing high school students with laboratory staff from Loyola Marymount University and the Algalita marine education program to study the water quality of the South Bay beaches. West Basin sponsors this on-going effort to improve the water quality of Santa Monica Bay and introduce youth to water quality research and careers.

Teams volunteer to collect water samples from 18 local beaches to then analyze and publish their results in an on-going database. Students have participated from several schools within West Basin's service area.

Career Training Programs

Every February, West Basin partners with Suez Water to participate in the Inglewood/Airport Chamber of Commerce's Annual Youth Business and Industry Job Shadow Day. West Basin serves as a business host and conducts a five-hour water career program and facility tour that accommodates ten students. Students are introduced to West Basin's mission, water sustainability projects, agency organization and variety of job positions. Students then go on a tour of the ECLWRF to see the result of the public/private partnership with Suez Water. Students are exposed to a wide range of careers in chemistry, biology, engineering, human resources, finance, water resource planning, public affairs, and operations and maintenance. West Basin also hosts high school summer internships in partnership with the South Bay Workforce Investment Board.

7.7 Conservation Program Partnerships

By partnering with various entities, West Basin is able to leverage its funding and resources in order to develop targeted programs that have been identified in its Water Efficiency Master Plan.

Over the last five years, West Basin has partnered with local, state and federal agencies and has received several grants. These grants have allowed West Basin to develop and offer the public free water conservation programs. For every $1 that West Basin invests, it provides $3 worth of programs to the public. West Basin's funding partners have included the following:

- California Department of Water Resources
- California Native Plant Society
- Metropolitan Water District of Southern California
- Retail Water Agencies
- Southern California Edison
- Southern California Gas Company
- United States Bureau of Reclamation

West Basin has continued utilizing the services of the South Bay Environmental Services Center and has also continued its partnership with the Surfrider Foundation.

- **South Bay Environmental Services Center (SBESC)**: In 2006, West Basin formed a partnership with the SBESC. The SBESC is a program of the SBCCOG that promotes programs provided by Edison, the Gas Company, Los Angeles County Sanitation District and LA Metro as well as West Basin's water conservation programs throughout 16 cities in the South Bay. From 2010 – 2015, the SBESC has distributed West Basin's education and conservation information at over 500 tabling events and has helped disseminate information to tens of thousands of people.

- **Surfrider Foundation**: In 2006, West Basin formed a partnership with Surfrider for the purpose of creating the Ocean-Friendly Landscape Program. Since that time, West Basin has collaborated with Surfrider and constructed 12 Ocean-Friendly Demonstration Gardens (OFGs). West Basin also continues to sponsor Surfrider's Teach & Test Program. Surfrider works with high school students to teach them about water runoff issues and pollution to the ocean.

- **Southern California Edison and Southern California Gas Company**: West Basin continues to collaborate with the local energy utilities to share information and cross promote programs. West Basin attends a monthly partners meeting at the SBESC where agencies share their programs and identify ways to collaborate on water and energy programs.

7.8 Utility Operation

7.8.1 Metering

As a wholesaler, West Basin does not directly meter customers' water use. However, every water agency within West Basin's service area bills their customers according to meter consumption. By encouraging installation of dedicated landscape meters, agencies will be able to recommend the appropriate irrigation schedules through future landscape programs.

7.8.2 Water Conservation Program Coordination and Staffing Support

West Basin's Conservation Department employs a Senior Water Use Efficiency Specialist and a Water Resources Analyst, both full time employees. The Water Resources Analyst supports the Water Efficiency Specialist with 50% of his time. The other 50% is spent on water resource planning issues. This department works on implementing the various programs described in this section, seeks funding to support these projects and supports the functions of West Basin and its Board of Directors on water efficiency issues.

For every $3 spent in the Water Efficiency Program, only $1 is contributed from West Basin’s budget; the other $2 is contributed from grant funding and local partnerships.

7.8.3 Asset Management

West Basin allocates annual funds as a part of its Capital Improvement Plan for maintenance and repair of its recycled water distribution system and Desalter operations. West Basin has an asset management program for the recycled water distribution system and Desalter operations for maintenance and improvements. West Basin responds to needed repairs as they arise and via scheduled maintenance as identified through the Asset Management Program.

Section 8 Water Rates & Charges

As a water wholesale agency, West Basin does not directly charge residential and other end-use customers for supplies. Instead, West Basin's retail agencies purchase water from West Basin and then combine it with other supplies to deliver to their customer agencies at a variety of rates.

West Basin's current potable water rates are primarily based upon the costs of imported supplies purchased from Metropolitan. Imported water purchased by West Basin from Metropolitan carries not only the cost of acquiring, importing, treating and distributing the water throughout the region, but also the costs associated with maintaining Metropolitan reliability and "readiness to serve". The total West Basin rate structure must include the value-added costs associated with representing retail agencies at Metropolitan, and distributing locally-produced recycled and desalinated groundwater supplies.

8.1 Metropolitan Rate Structure

In 2002, the Metropolitan Board adopted a new rate structure to support its strategic planning vision to encourage the development of local supplies through recycled water, promote local conservation efforts, and ensure a reliable supply of imported water. To achieve these objectives, Metropolitan called for voluntary purchase orders from its member agencies, unbundled its water rates, established a tiered supply rate system, and added a capacity charge. The new rate structure components provide a better opportunity for Metropolitan and its member agencies to manage their water supplies and proactively plan for future demands. This same structure remains in effect today.

8.1.1 Purchase Orders

The Purchase Order was an agreement between Metropolitan and a member agency, whereby the member agency agreed to purchase a minimum amount of non-interruptible water over a ten-year purchase period. The Annual Maximum was the amount of lower cost (Tier 1) non-interruptible water that a member agency was entitled to purchase annually as a result of that Purchase Order.

Table 8-1 shows how both the current annual maximum and purchase commitment were calculated for West Basin. West Basin's highest delivery of non-Order interruptible water was 150,464 AF in the most recent 12-year period of FY 2003-2014. Therefore, West Basin's Tier 1 annual maximum is calculated as 90 percent of 150,464 AF – or 135,417 AF. The total purchase commitment is 60 percent of 150,464 AF multiplied by the 10 year Purchase Order period - or 902,780 AF to be purchased by the end of 2024. West Basin has remained below its Tier 1 annual maximum for the first 10 years of the Purchase Order, signed in 2002, and is projected to meet its Purchase Commitment by the year 2024.

Table 8-1: West Basin Purchase Order Terms

Initial Base Allocation (AF)	Tier 1 Annual Maximum (90% of Base) (AF)	Purchase Order (60% of Base x 10) (AF)
150,464	135,417	902,780

8.1.2 Unbundled Rates and Tier 1 & 2

To justify the different components of the cost of water on a per acre foot basis, Metropolitan rates are comprised of the following components:

- **Supply Rate Tier 1:** Reflects the average supply cost of water from the Colorado River and State Water Project.
- **Supply Rate Tier 2:** Reflects the Metropolitan costs associated with developing new supplies, which are assessed when an agency exceeds its Tier 1 limit of firm deliveries.
- **System Access Rate:** Recovers a portion of the costs associated with the conveyance and distribution system, including capital and operating and maintenance costs.
- **Water Stewardship Rate:** Recovers Metropolitan's cost of providing incentives to member agencies for conservation, water recycling, groundwater recovery, and other water management programs approved by the Metropolitan Board.
- **System Power Rate:** Recovers Metropolitan's electricity-related costs, such as pumping water through the conveyance and distribution system.
- **Treatment Surcharge:** Recovers the treatment cost and is assessed only for treated water deliveries, whether firm or non-firm.

The Metropolitan rates for 2016 calendar year are displayed in Table 8-2.

Table 8-2: Metropolitan Rates Adopted for 2016

Category of Water	$/AF
Supply Rate Tier 1	$156
Supply Rate Tier 2	$290
System Access Rate	$259
Water Stewardship Rate	$41
System Power Rate	$138
Treatment Rate	$348
Total Tier 1 Treated Rate	**$942**
Total Tier 2 Treated Rate	**$1,076**

8.1.3 Metropolitan Capacity Charge

The Metropolitan capacity charge was developed to recover the costs of providing distribution capacity during peak summer demands. The aim of this charge is to encourage member agencies to reduce peak day demands during the summer months (May 1 thru September 30) and shift usages to the winter months (October 1 thru April 30), which results in more efficient utilization of Metropolitan's existing infrastructure and defers capacity expansion costs. Currently, Metropolitan's capacity charge for CY 2016 is set at $10,900 per cubic foot per second (cfs).

The capacity charge is applied to an agency's maximum usage flow rate, which is the highest daily average usage (per cfs) for the past three summer periods. Table 8-3 shows this data for West Basin.

Table 8-3: Metropolitan Capacity Charge for 2016

Peak Flow 2012 (cfs)	Peak Flow 2013 (cfs)	Peak Flow 2014 (cfs)	3-Year Max (cfs)	Capacity Charge
223	230	218	230	**$2,509,180**

Note: These peak flows are based upon West Basin's coincident peak of all its Metropolitan connections.

8.1.4 Readiness-to-Serve Charge

Metropolitan's readiness-to-serve charge recovers a portion of Metropolitan's debt service costs associated with regional infrastructure improvements and is determined by the member agencies' firm imported deliveries for the past ten years. West Basin meets this obligation through its commodity rates.

8.2 West Basin's Imported Water Rates

To deliver water from Metropolitan to its customer agencies, West Basin must pass along the Metropolitan costs as well as an additional administrative surcharge to its retail agencies. West Basin's rate structure is described below.

8.2.1 Purchase Agreements

In order to meet the Purchase Order commitment with Metropolitan, West Basin established its own purchase contract policy with its retail agencies from 2002-2007 and 2008-2012. When Metropolitan renewed the Purchase Orders with its member agencies, West Basin decided not to require Purchase Orders with its customer agencies.

8.2.2 Reliability Service Charge

One of the main revenue sources for West Basin is the reliability service charge applied to all imported water sold. Revenue from this charge recovers West Basin's administrative costs including planning, outreach and education, and conservation efforts, as well as a portion of the recycled water system's operating costs. As of July 1, 2015, West Basin's reliability service charge is $194/AF.

8.2.3 Readiness-to-Serve Surcharge

West Basin passes along Metropolitan's readiness-to-serve (RTS) charge within its commodity rates for non-interruptible and Barrier water supplies. As of January 1, 2016, West Basin's RTS surcharge is at $118/AF.

8.2.4 Water Service Charge

Water utility revenue structures benefit from a mix of fixed and variable sources. West Basin's water service charge recovers a portion of the agency's fixed administrative costs, but is a relatively small portion of its overall revenue from water rates. As of July 1, 2015, the water service charge is $56/cfs of a customer agency's meter capacity for imported water meters.

8.2.5 West Basin's Capacity Charge

Metropolitan's capacity charge is intended to encourage customers to reduce peak day demands during the summer months, which will result in more efficient utilization of Metropolitan's existing infrastructure. West Basin has passed through Metropolitan's capacity charge to its customer agencies based upon their highest daily average usage (per cfs) for the past three summer periods. The capacity charge that West Basin is assessed by Metropolitan is $8,500/cfs effective January 1, 2016.

8.2.6 Desalter Water Charges

West Basin also sells water produced by the C. Marvin Brewer Desalter at the effective Metropolitan rate. This includes the Metropolitan non-interruptible base rate and an acre-foot equivalent for the Capacity Charge. The rate for Desalter water is $1,060/AF as of January 2016.

8.3 Recycled Water Rates

West Basin's Edward C. Little Water Recycling Facility provides five different qualities of water to meet the needs of landscape irrigation, cooling towers, refineries, and industries within and outside its service area. Since 1995, West Basin has encouraged the maximum use of recycled water by providing an economic incentive through specialized rates and charges.

8.3.1 Recycled Water Rates

West Basin uses seven different rates for recycled water to account for differing treatment quality, power requirements, and customer location. All rates are assessed to include the operation and maintenance, labor, and power costs associated with the delivery of recycled water. A majority of these rates are set up in a declining tiered structure to further encourage the use of recycled water, while the others are set up to service one or more customers at a uniform rate. Most of the recycled water rates are set lower than potable water rates except for highly treated recycled water for use by refineries. The rates for the 2015 - 2016 fiscal year are shown in Table 8-4.

Table 8-4: FY 2015-16 Recycled Water Rates

	Within West Basin Service Area						Outside Service Area
Volume (AF/Month)	Basic	West Coast Barrier (<4,500 AF)	West Coast Barrier (4,500+ AF)	Low Pressure Boiler Feed	Nitrified	High Pressure Boiler Feed	
0-25	$1,005/AF	$1,168/AF	$605/AF	$1,233/AF	$985/AF	$1,589/AF	$1,047/AF
25-50	$995/AF	$1,168/AF	$605/AF	$1,233/AF	$985/AF	$1,589/AF	$1,037/AF
50-100	$985/AF	$1,168/AF	$605/AF	$1,233/AF	$985/AF	$1,589/AF	$1,027/AF
100-200	$975/AF	$1,168/AF	$605/AF	$1,233/AF	$985/AF	$1,589/AF	$1,017/AF
200+	$965/AF	$1,168/AF	$605/AF	$1,233/AF	$985/AF	$1,589/AF	$1,007/AF

Customers outside of West Basin's service area boundaries pay an additional $42/AF per tier. This additional charge is applied to make up for the recycled water standby charge that is not levied on their parcels.

8.3.2 Recycled Water Standby Charge

The recycled water standby charge is levied by West Basin to each parcel within the service area. A rate of $24 per parcel (up to one acre for residential) is administered by West Basin to provide a source of non-potable water completely independent of drought-sensitive supplies. The revenue collected from this charge is used to pay the debt service obligations on the West Basin water recycling facilities. Each year West Basin holds a public hearing to adopt the West Basin Municipal Water District Engineer's Report and Resolution to assess this charge.

8.4 Future Water Rate Projections

As the demand for water increases in southern California so does the cost to administer, treat, and distribute imported and recycled water. However, West Basin has worked diligently to ensure that stable and predictable rates are managed for the future. This section discusses projections of imported and recycled water rate trends for the next ten years.

8.4.1 Imported Water Rate Projections

In 2004, the Metropolitan Board adopted its Long Range Financial Plan. This plan was developed to forecast future costs and revenues necessary to support its operations and capital investments. Furthermore, it lays out the financial policy Metropolitan will pursue over the next ten years. According to projected Metropolitan sales and planned investments into local resources, Metropolitan estimates imported water rates will increase three to five percent annually. As a result, West Basin's water reliability service charge is projected to increase at an annual average rate of five to seven percent. This increase is determined by West Basin's own Long Range Financial analysis and revenue requirements. Figure 8-1 displays West Basin's imported water rate projections for the next ten years.

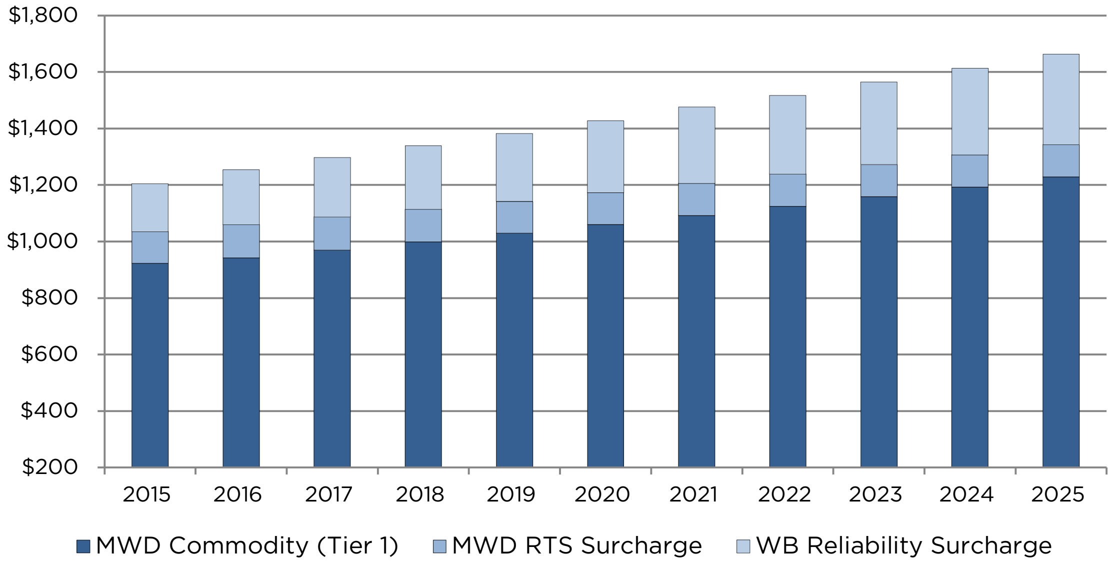


Figure 8-1: Projected Imported Water Rates

8.4.2 Recycled Water Rate Projections

Like imported water rates, recycled water rates are expected to increase due to higher treatment, maintenance, and power costs. However, West Basin believes in setting recycled water rates at a competitive level to help offset the use of imported water. To achieve this economic incentive, recycled water rates have been projected to increase at a slightly lower level than imported water. Rates are projected to increase for all types of recycled water by an average of five percent annually. However, these rates may vary depending upon energy and chemical costs.

Section 9 Recycled Water

Recycled water is the cornerstone of West Basin's efforts to increase water reliability by augmenting local supplies and reducing dependence on imported water. West Basin has become an industry leader in water reuse since planning and constructing its recycled water system in the early 1990s. West Basin's recycled water supply is sold to customers for non-potable applications such as landscape irrigation, and commercial and industrial processes, as well as used for indirect potable reuse through groundwater replenishment. While serving to offset imported water supplies, recycled water use also results in less ocean discharge of lower quality effluent into the Santa Monica Bay.

West Basin delivered a total of approximately 35,250 AF of recycled water to sites located within and outside its service area in FY 2014-15. Municipal and industrial recycled water use within West Basin's service area totaled approximately 16,707 AF, seawater barrier use was approximately 12,403 AF, and use outside its service area was approximately 6,140 AF. It is projected that recycled water sales could represent 13 percent of total retail water demand by 2040 within West Basin's service area.

9.1 Recycled Water Supply and Treatment

West Basin's recycled water supply source is treated wastewater effluent from the City of Los Angeles's Hyperion Water Reclamation Plant (Hyperion). The City of Los Angeles has operated Hyperion, located adjacent to West Basin's service area, since 1894. Hyperion was initially built as a raw sewage discharge plant that has been upgraded over the years from partial secondary to full secondary treatment, improving discharge into the Santa Monica Bay. Hyperion has a maximum daily flow capacity of 450 MGD and a peak wet weather flow capacity of 800 MGD.

West Basin purchases approximately 37,600 AF, or roughly 13 percent of Hyperion's secondary effluent for treatment at West Basin's ECLWRF. West Basin opened ECLWRF in 1995, which is still the only recycled water plant of its kind in the nation. This facility has a current capacity of 62,700 AF with its fifth expansion completed in 2014. Although the City of Los Angeles strives to provide West Basin with a consistent quality of secondary effluent, the ECLWRF has to accommodate inevitable fluctuations in influent quality.

Most of West Basin's recycled water is treated to meet California Code of Regulations Title 22 (Title 22) disinfected tertiary recycled water standards. Title 22 addresses specific treatment requirements for recycled water and lists approved uses. Approximately 2,000 tests are performed monthly at the West Basin ECLWRF to ensure water quality meets all State and Federal requirements.

In 2002, West Basin's ECLWRF was recognized by the National Water Research Institute as one of the six National Centers for Water Treatment Technologies in the country. West Basin's recycled water program is unique in that it provides a variety of recycled water qualities beyond basic tertiary Title 22 levels. These five types of recycled product water are developed to meet specific customer specifications and needs as follows:

- **Disinfected Tertiary Water:** Secondary treated wastewater meeting Title 22 regulations is produced for non-potable irrigation through a conventional treatment process of coagulation, flocculation, clarification, filtration and disinfection.
- **Nitrified Water:** Disinfected tertiary water that is nitrified to remove ammonia is produced for use in refinery cooling towers.
- **Reverse Osmosis Water:** Secondary treated wastewater pretreated by ozone and microfiltration followed by reverse osmosis (RO), ultra-violet light and peroxide treatment, stabilization, and disinfection for groundwater recharge.
- **Pure Reverse Osmosis Water:** Secondary treated wastewater and tertiary disinfected recycled water that has undergone micro-filtration and RO for low-pressure boiler feed water.
- **Ultra-Pure Reverse Osmosis Water:** Secondary treated wastewater and tertiary disinfected recycled water that has undergone micro-filtration and two passes through RO for high-pressure boiler feed water.

Within a few years and before the next UWMP update in 2020, a sixth water quality is expected to be available:

- **Nitrified/Tertiary Membrane Bioreactor (t-MBR):** Disinfected tertiary water that is nitrified to remove ammonia and filtered and produced for use at the Carson Regional Water Recycling Facility for the Tesoro Refinery cooling towers.

In addition to providing recycled water for commercial and industrial uses, West Basin produces reverse osmosis water that the WRD purchases and blends with potable water for injection into the West Coast Basin Seawater Barrier (Barrier). This injected water has the dual benefit of preventing seawater intrusion into the aquifers of the WCGB, but also replenishing the water that is extracted by drinking water wells.

Seawater barriers are a series of coastal injection wells that form a barrier to ensure the groundwater level near the ocean stays high enough to keep seawater from seeping into a basin. The Barrier has 153 injection wells. In April 2009, West Basin and WRD signed an agreement to increase the amount of

RO recycled water supplied to the barrier to 100 percent by 2012, so blending is no longer required. Currently, potable water is only injected when recycled water production is unable to meet the expected deliveries to the barrier or if injection exceeds the recycled water capacity.

West Basin also operates three satellite facilities that provide additional treatment after tertiary treatment at the ECLWRF in order to supply the different types of recycled product water to large customers that are often a long distance from the ECLWRF. Figure 9-1 shows the locations of the ECLWRF in the city of El Segundo as well as the satellite treatment facilities including: the Exxon-Mobil Nitrification Facility in Torrance, the Chevron Nitrification Facility in El Segundo, and the Juanita Millender-McDonald Carson Regional Water Recycling Treatment Facility in Carson. Table 9-1 gives the treatment level and quantity of water treated by the ECLWRF.

Table 9-1: Wastewater Treatment and Discharge within Service Area in 2015 (AF)

Wholesale: Wastewater Treatment and Discharge Within Service Area in 2015									
						2015 volumes			
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
ELCWRF	Brine permit: NPDES #CA0063401	Brine is sent 5 miles offshore through the City of Los Angeles' ocean outfall	Ocean outfall	Yes	Tertiary	35,250	0	29,110	6,140
					Total	**35,250**	**0**	**29,110**	**6,140**

9.2 Recycled Water Use

9.2.1 Existing System

West Basin has saved over 169 billion gallons of imported potable water from Northern California and the Colorado River which otherwise would have been used for non-potable applications. All recycled water is initially produced at the ECLWRF where it is distributed to either end-users or one of the three satellite facilities.

As Figure 9-1 shows West Basin's recycled water system serves the cities of Carson, El Segundo, Gardena, Hawthorne, Hermosa Beach, Inglewood, Lawndale, Manhattan Beach, Redondo Beach, and unincorporated areas of Los

Angeles County within its service area, as well as the cities of Torrance and Los Angeles outside of its service area.

The recycled water distribution infrastructure is separate from the potable drinking water system. All pipes, pumps and other equipment used to transport recycled water are clearly identified as recycled water to distinguish them from the potable drinking water system.

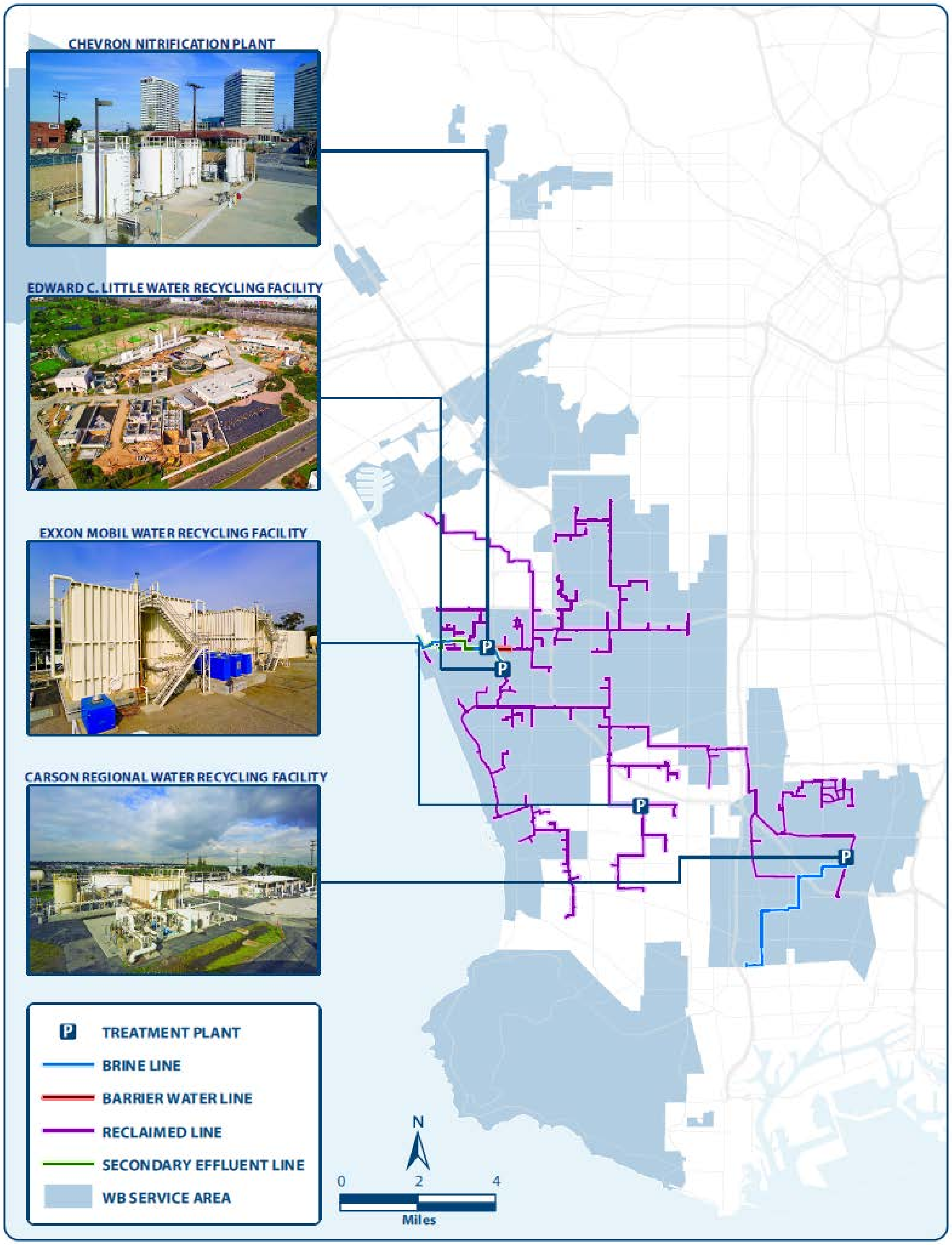


Figure 9-1: West Basin's Water Recycling Facilities

9.2.2 Recycled Water Use by Type

A breakdown of West Basin's recycled water end-users is shown in Figure 9-2. West Basin supplies recycled water for a wide-variety of uses including:

- Seawater Barrier
- Construction
- Industrial: Multi-Use and Nitrified
- Irrigation: Cal-Trans, cemetery, colleges, golf courses, landscape, medians, multi-use, parks, and schools
- Street Sweeping

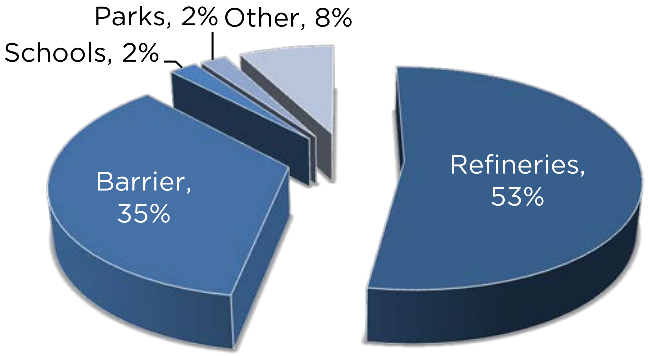


Figure 9-2: Recycled Water Use by Type

9.2.3 Historical and Current Sales

West Basin's recycled water sales over the past ten years are illustrated in Figure 9-3 and Table 9-2. Sales have fluctuated over the years but have increased to approximately 36,000 AF over the past two years.

West Basin has been able to deliver over 300,000 AF of recycled water over the last ten years to customers within and outside of its service area. West Basin anticipates recycled water production and use to increase in the future due to system expansions, new applications, increasing public acceptance and economic incentives.

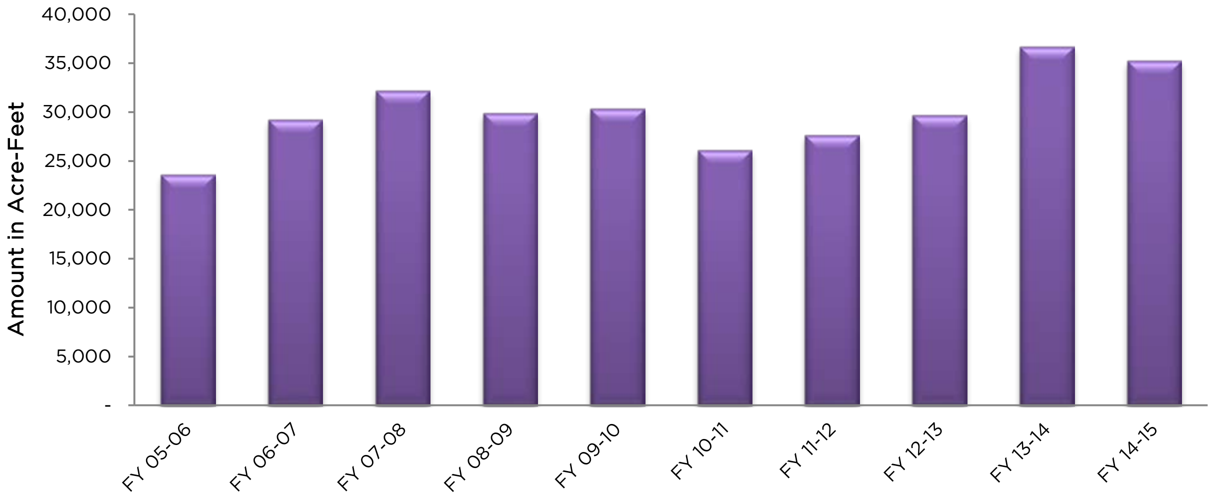


Figure 9-3: Historical Recycled Water Sales
(FY 2005-2015)

Table 9-2: West Basin Recycled Water Sales
FY 2005-2015 (AF)

West Basin	FY 05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15	Total
California Water Service-Dominguez	3,665	3,610	4,690	5,293	4,959	4,392	5,522	5,841	6,245	5,669	**49,886**
California Water Service-Hawthorne	111	118	85	99	90	79	90	108	118	98	**994**
California Water Service-Hermosa/ Redondo	119	141	145	163	150	133	136	162	167	147	**1,462**
City of El Segundo	7,405	8,201	7,865	8,978	9,035	6,638	6,888	7,665	8,616	9,300	**80,589**
City of Inglewood	625	865	706	742	677	606	642	783	827	728	**7,201**
City of Manhattan Beach	249	316	288	251	264	264	291	396	305	313	**2,938**
Golden State Water Company	429	523	552	410	360	148	333	538	573	452	**4,319**
Municipal &Industrial	12,604	13,774	14,330	15,936	15,535	12,259	13,901	15,492	16,852	16,707	**147,390**
WRD (Barrier)	4,383	9,104	11,129	7,652	7,797	7,320	6,531	6,622	12,372	12,403	**85,312**
Within Service Area	**16,987**	**22,878**	**25,459**	**23,588**	**23,331**	**19,579**	**20,431**	**22,114**	**29,224**	**29,110**	**232,702**
City of Torrance	253	285	311	277	272	234	283	271	346	333	**2,866**
City of Torrance-Mobil	6,156	5,774	6,078	5,599	6,173	5,551	6,069	6,364	6,183	4,937	**58,883**
Los Angeles Department of Water & Power	257	313	360	444	608	763	876	968	998	870	**6,457**
Outside of Service Area	**6,666**	**6,372**	**6,750**	**6,320**	**7,053**	**6,548**	**7,228**	**7,602**	**7,527**	**6,140**	**69,206**
TOTAL	23,653	29,250	32,209	29,908	30,384	26,127	27,659	29,716	36,751	35,250	300,908

West Basin's recycled water system also serves the cities of Torrance and Los Angeles located outside of its service area. Therefore, the total usage within West Basin's service area was 29,110 AF and the total amount of recycled water delivered by West Basin was 35,250 AF in FY 2014-15.

According to West Basin's 2010 UWMP, deliveries of recycled water within the service area were projected to reach 33,348 AF by 2015. As shown in Table 9-3, actual sales in FY 2014-15 were lower than the projection by approximately 4,000 AF. This was mainly due to seawater barrier improvements that hindered the amount of recycled water that could be delivered to the barrier in 2014. The construction was performed by the Los Angeles County Department of Public Works (LACDPW), who own and operate the barrier. However, West Basin delivered more recycled water than expected to irrigation and industrial customers.

Table 9-3: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual (AFY) (Inside Service Area Only)

<table>
<tr><th colspan="3">Wholesale: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual</th></tr>
<tr><td>☐</td><td colspan="2">Recycled water was not used or distributed by the supplier in 2010, nor projected for use or distribution in 2015.
The wholesale supplier will not complete the table below.</td></tr>
<tr><td>Name of Receiving Supplier or Direct Use by Wholesaler</td><td>2010 Projection for 2015</td><td>2015 actual use</td></tr>
<tr><td>Irrigation/Industrial</td><td>16,368</td><td>16,707</td></tr>
<tr><td>West Coast Barrier</td><td>16,980</td><td>12,403</td></tr>
<tr><td>Total</td><td>33,348</td><td>29,110</td></tr>
</table>

9.2.4 Projected System Expansions

In 2009, West Basin completed a Capital Implementation Master Program (CIMP). The CIMP includes all of the planned projects for recycled water and desalination through 2030. The major recycled water capital projects are described below.

Tesoro Refinery Capacity Expansion Project

This project will provide 2.59 MGD of increased supply to the Tesoro Refinery by constructing a Tertiary-Membrane Bioreactor (t-MBR) facility and fully restoring the Microfiltration (MF) capacity to contract requirements. This project will provide the following benefits: increase the recycled water supply to Tesoro; improve water quality of the nitrified water; reduce breakpoint chlorination to the current nitrified effluent, thereby reducing the chloride content of the wastewater; optimize the blend of RO & nitrified water used in Tesoro’s cooling towers; and remove total suspended solids and colloidal iron concentrations. The expected completion date for this project is FY 2017-18.

ECLWRF Reverse Osmosis Clean-In-Place (CIP) Waste Discharge Project

The RO CIP waste and RO brine are currently discharged into the existing brine line that connects to the Hyperion ocean outfall. This project allows West Basin to discharge the RO CIP waste to the sewer system to ensure compliance with the brine permit issued by the Regional Water Quality Control Board (RWQCB) to maintain continuous production for the Barrier System and Chevron’s Boiler Feedwater system. The expected completion date for the project is FY 2016-17.

Hyperion Secondary Effluent Pump Station Expansion

As West Basin's recycled water demand continues to increase, the demand for Hyperion's effluent will eventually exceed the capacity of the Hyperion Secondary Effluent Pump Station. A pump station expansion would be able to provide a capacity of up to 70 MGD for ECLWRF. West Basin is working closely with the Los Angeles Department of Water & Power (LADWP), the provider of electrical power to the pump station, to construct a second electrical feeder to the pump station that will increase the reliability of the pump facilities. The expected completion date for the project is FY 2016-17.

Water Quality Facility Improvements

Water quality facility improvements are made to existing facilities to improve or sustain the water quality provided to recycled water customers. The project provides customers with a consistent recycled water quality for their specific needs. The expected completion date for the project is FY 2015-16.

West Basin Pipeline Lateral Extensions

West Basin is continuously extending its recycled water distribution system as demand increases. These projects will increase the supply of West Basin's disinfected tertiary recycled water for irrigation and cooling towers to various facilities within the West Basin service area and reduce the use of imported potable water. The additional supply also improves the water quality within the distribution system by moving water through the system faster, reducing the potential for biological growth, scaling, and corrosion within the pipeline. Many of these laterals are part of the **Harbor-South Bay Recycled Water Expansion Project**.

The Harbor-South Bay Recycled Water Expansion Project is a partnership between West Basin and the United States Army Corps of Engineers (USACE) to expand West Basin's current recycled water distribution system as well as improve overall system reliability. This expansion will provide additional recycled water supplies to the cities of Carson, Torrance, Palos Verdes, Gardena, and unincorporated areas of Los Angeles County. The expected completion date for the project is ongoing pending funding availability.

Expansion of West Coast Basin Barrier Production

West Basin desires to maximize the available production for injection into the Barrier. The MF systems constructed as part of the Phase IV and V expansions at ECLWRF include expansion slots for new membrane units to be installed. This project's first phase will include the engineering design and construction of additional Phase V MF units starting in FY 2015-16. West Basin will benefit from reduced potable water use for Barrier injection and an increase in revenue through additional sales of recycled water to WRD. The expected completion date for the project is FY 2017-18.

Nitrified Water Alkalinity Process Upgrades

This project will aim to improve the alkalinity of the recycled water provided to the Chevron and Exxon-Mobil Refineries to facilitate the removal of ammonia. This project will provide the customers with an improved water quality as well as reduce operational chemical costs associated with breakpoint chlorination for ammonia removal. The expected completion date for the project is FY 2015-16.

Carson Mall Lateral Phase II

This is a new recycled water pipeline project to be constructed in cooperation with USACE under the Harbor-South Bay Recycled Water Expansion Project. The project will provide disinfected tertiary recycled water for approved irrigation uses to the city of Carson’s medians and parks. In addition, this pipeline will connect to a future recycled water system to be built by the city of Carson that will expand the delivery of recycled water to additional medians, City Hall green areas, parks, and schools. The expected completion date for the project is FY 2015-16.

South Gardena Lateral

The South Gardena Lateral will connect three new recycled water customers: Gardena High School, South Garden Park, and Roosevelt Memorial Association. These sites will reduce their reliance on imported water. Once completed, the project is anticipated to serve approximately 120 AFY of recycled water. The expected completion date for the project is FY 2016-17.

Universal Microfiltration Pilot

The Universal Microfiltration Pilot will allow West Basin to determine design conditions for a non-proprietary, universal microfiltration system using a variety of commercially available membrane modules. A non-proprietary, universal microfiltration system will provide greater competition in bidding situations and allow flexibility to change manufacturers as technology, feed water quality, and treatment objectives change. The expected completion date for the project is FY 2015-16.

Customer Development and Retrofit Projects

Customer developed projects assist in making connections and retrofits to new recycled water customers, providing them with recycled water and reducing dependence on imported water. This is an on-going project.

9.2.5 Projected Recycled Water Use

The 2009 CIMP identified and prioritized areas where recycled water has the potential to expand based upon potential future customers. Converting fabric and carpet dying industrial users to recycled water use are examples of significant opportunities for increased use.

The CIMP projects described in Section 9.2.4 are expected to result in an additional 15,000 AF of recycled water use within West Basin's service area by 2040. West Basin will continue to pursue new cost-effective projects both within and outside its service area.

Tables 9-4 and 9-5 illustrates the projected increase of recycled water over the next 25 years within and outside the service area.

Table 9-4: Current and Projected Recycled Water Use Within Service Area (AF)

Wholesale: Current and Projected Retailers Provided Recycled Water Within Service Area							
☐	Recycled water is not directly treated or distributed by the supplier. The supplier will not complete the table below.						
Name of Receiving Supplier or Direct Use by Wholesaler	Level of Treatment	2015	2020	2025	2030	2035	2040 *(opt)*
WBMWD	Tertiary	16,707	21,894	27,135	27,135	27,135	27,135
WBMWD (IPR)	Advanced	12,403	17,000	17,000	17,000	17,000	17,000
	Total	**29,110**	**38,894**	**44,135**	**44,135**	**44,135**	**44,135**

Table 9-5: Current and Projected Recycled Water Use Outside of Service Area (AF)

Agency	2015	2020	2025	2030	2035	2040
City Torrance	5,270	5,421	5,433	9,156	9,156	9,156
City of Los Angeles	870	970	970	970	970	970
Central Basin Municipal Water District	0	0	675	675	675	675
Total	6,140	6,391	7,078	10,801	10,801	10,801

9.2.6 Encouraging Recycled Water Use

West Basin generates interest in recycled water by contacting potential customers and cities with sites meeting the following conditions:

- Located near an existing recycled water main pipeline;
- High water use potential; and
- Mandated to use recycled water and/or express interest in using recycled water.

For commercial and industrial customers, West Basin emphasizes recycled water is a profitable tool for businesses, beyond the benefits of water conservation. West Basin markets recycled water as a resource that is:

- Less expensive than potable water treated to similar quality standards;
- More reliable than imported water; and
- Consistent with statewide goals for water supply and ecosystem improvement in the State Water Project and Colorado River systems.

The applications are expanding from traditional irrigation uses such as golf courses and parks to unconventional commercial and industrial uses. Through innovative marketing, recycled water is now being used by oil refineries and for cooling towers. In addition, West Basin is investigating recycled water use in fabric dye houses, co-generation plants, and commercial laundries.

Other financial incentives are used to encourage recycled water use aside from West Basin wholesaling recycled water at a rate lower than potable water. Some potential recycled water customers do not have the financial capability to pay for onsite plumbing retrofits necessary to receive recycled water. In some of these situations, West Basin advances funds for retrofitting that can later be reimbursed through water billing. Table 9-6 illustrates West Basin's coordinated effort with key stakeholders during the development of the CIMP.

Table 9-6: CIMP Coordination

Participating Agencies	Role in Plan Development
Water Purveyors	Customer Development, Facilities, Impacts, Rates
Wastewater Agencies	Recycled Water Supply, Water Quality, Reliability
Groundwater Agencies	Rates and Customer Involvement
Planning Agencies	Economic Analysis, Rates, Data Assessment, Customer Assessment, Rates, Community Impacts, Customer Involvement, Conceptual Pipeline Routes, Cost Estimates

9.2.7 Funding

Capital costs for projects planned over the next five years have been budgeted to average approximately $32 million a year. These costs will be covered by the sources identified below and other sources as they become available.

Metropolitan Local Resources Program (LRP) Incentive: In order to qualify for LRP incentives, proposed desalination and recycled water projects by member agencies must cost more than projected Metropolitan treated non-interruptible water rates and reduce potable water needs. West Basin is eligible to receive a sliding scale incentive up to $340 per AF of produced recycled water over 25 years as a member agency of Metropolitan. This incentive is competitive and requires an application and review process by Metropolitan in coordination with West Basin staff.

Table 9-7 below shows historical and current LRP incentives provided by Metropolitan. The future full-scale ocean water desalination facility would be eligible under this program when financing is needed.

Table 9-7: Historical and Current LRP Incentives

LRP Project	Expiration Date (FY)
Historical	
Groundwater	
C. Marvin Brewer Desalter	2012/13
Existing	
Recycled Water	
Edward C. Little Water Recycling Facility Phases I-IV	2019/20
Edward C. Little Water Recycling Facility Phase I-IV (Seawater Barrier)	2019/20
Edward C. Little Water Recycling Facility Phase V	2036/37

Grant Funding: West Basin often applies for Federal and State grant funding for recycled water projects through the USACE, which awards qualified programs 75 percent of their project funding. West Basin has utilized this funding arrangement for several of its previous water recycling projects.

9.2.8 Direct Potable Reuse

Direct potable reuse (DPR) is the direct reuse of purified recycled water in a water supply system. Purified potable drinking water is created from treated wastewater and introduced directly into a municipal water supply system without an environmental "buffer".

The WateReuse Research Foundation (WRRF), in partnership with WateReuse California (WRCA), launched the DPR Initiative in June of 2012 to advance DPR as a water supply option in California. This was driven by the establishment of statewide recycled water use goals and a mandate from the California legislature to come up with a feasibility study by 2016 to investigate developing uniform water recycling criteria for DPR. This Initiative was built upon research that started in 2011 when WRRF began funding research identified in WateReuse's *Direct Potable Reuse: A Path Forward* publication. That effort informed a DPR Research Needs meeting held in December 2012 which forged the framework of the WRRF's DPR research agenda.

Since 2012, the DPR Initiative has raised over $6 million for cutting-edge DPR research. To date, WRRF has allocated $4.5 million to fund 26 DPR research projects. This research is important to address the regulatory, utility, and community barriers and is valued at $11.5 million.

All of the research under the DPR Initiative is made available to an Expert Panel for their consideration as they navigate the important task of determining the feasibility of DPR. An uninformed public may be the biggest obstacle to DPR, despite the technical feasibility and safety of the practice. WRRF and WRCA are taking a three-phased approach to gain public acceptance of DPR in California:

1. Develop Strategic Communication Plans (state and local)
2. Develop Messaging Material and Methods
3. Implement, Evaluate and Refine Plan

There are currently five types of DPR methods as shown in Figure 9-4 below. West Basin's injection into the WCGB seawater barrier qualifies in the second type - Groundwater Recharge: Subsurface Injection. In the future, West Basin would potentially pursue the fifth type of DPR method called AWT (advanced water treatment) water as an approved drinking water supply. The State Water Resources Control Board has not developed regulations for methods other than groundwater recharge.

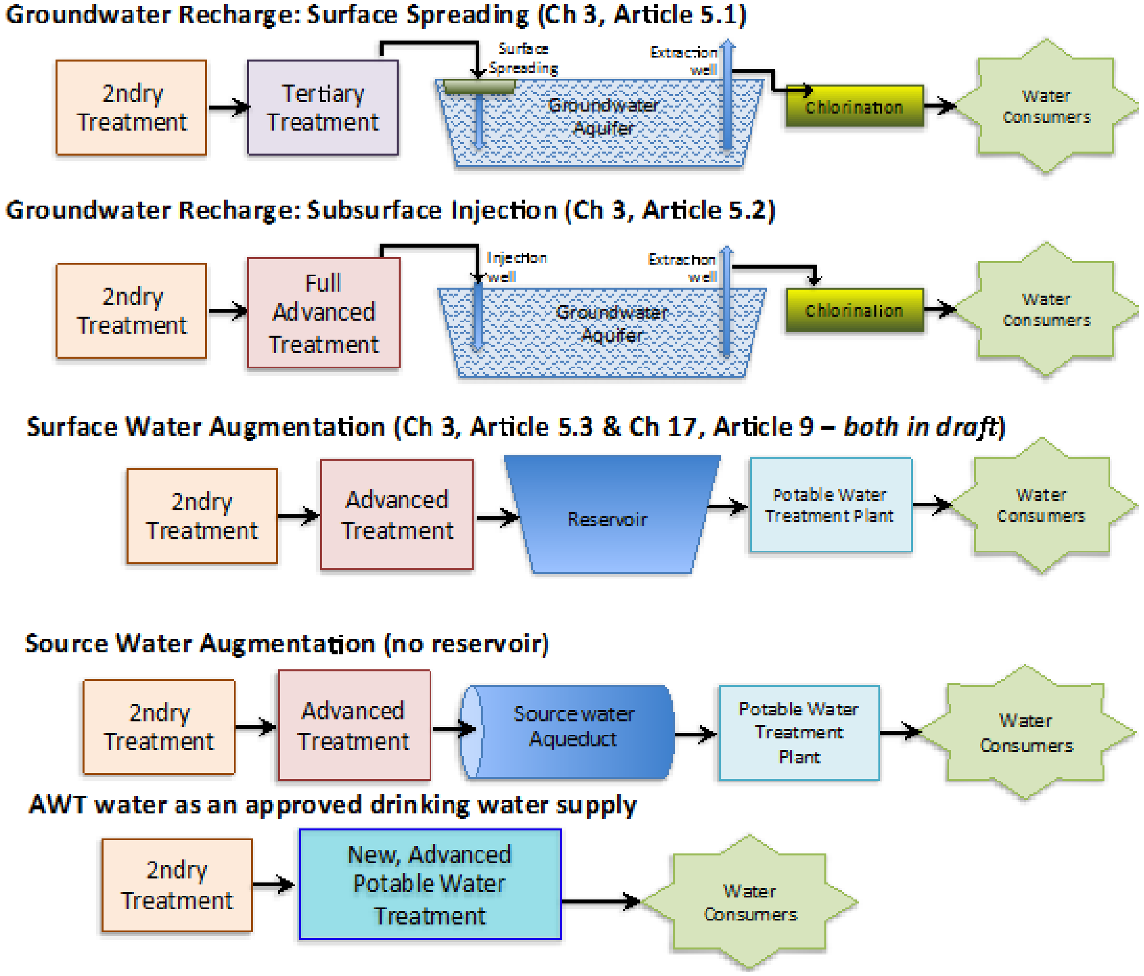


Figure 9-4: Types of Direct Potable Reuse Processes

9.2.8.1 Status of Potable Reuse Regulations in California

DPR is not currently practiced or permitted in California, but is being reviewed by an expert panel of the DDW. By December 2016, this expert panel is charged with advising DDW on public health issues and scientific/technical matters regarding the feasibility of developing criteria for DPR as well as determining the additional research requirements to establish criteria for DPR. Also, in 2016 the State Water Resources Control Board will issue regulations for Surface Water Augmentation, the third method shown in the figure above.

In general, the likelihood of DPR being used in California in a scheme where it is introduced into groundwater or surface water before additional treatment for potable use is more feasible than direct connection to a potable distribution system, at least for the foreseeable future. These methods (fourth and fifth shown in Figure 9-4 above) would realistically not occur for another 10 to 15 years as it is dependent on the regulations being developed by the State.

Section 10 Desalination

There are many reasons why West Basin is evaluating the feasibility of producing desalinated ocean water as an additional potable supply for its service area. The West Basin Board of Directors is committed to a water reliability strategy based on supply diversification to manage future risk and uncertainty. As a coastal water agency with viable sites for locating an ocean desalination facility, West Basin's Board has felt compelled to investigate how full scale production can be accomplished in a cost-effective and environmentally responsible manner.

Since the early 1990s, West Basin has been at the forefront of the development of reliable local supplies that are independent of weather-induced shortages and offset a need for less reliable imported water from the oversubscribed Colorado River and the environmentally sensitive Sacramento-San Joaquin Bay Delta. This has taken the form of large scale implementation of non-potable reuse and cutting edge industrial uses of recycled water along with potable reuse through groundwater recharge and brackish groundwater recovery. As part of West Basin's continued effort to diversify its sources of supply and improve the reliability of its customer agencies, the identification and planning for ocean water desalination has been a logical and anticipated next step in the diversification program.

West Basin, as a Metropolitan member agency, has been a part of long term regional efforts by Metropolitan to develop an integrated and effective resources strategy that will improve supply reliability and benefit the entire Metropolitan service area. The foundation of the integrated strategy can be found in the responsibility that southern California water agencies share in developing local supplies. The Integrated Resources Plan (IRP) is Metropolitan's long term water reliability plan, updated about every five years. As in previous IRPs, the 2015 IRP calls for a mix of imported and member agency local supply development and water use efficiency enhancements to meet future regional demands. In other words, the ability of southern California to meet long term demands for water is predicated in part on member and local agencies developing locally sourced water supplies not subject to the hydrologic variations that affect imported supplies.

Supply diversity is also the cornerstone of the state's guiding water policy document developed during the current drought. The Brown Administration has used the Water Action Plan as the roadmap to sustainable water management in California. Similar to Metropolitan's IRP, the Water Action Plan notes that water to meet new demand in the State "will come from a combination of improved conservation and water use efficiency, conjunctive water management (i.e., coordinated management of surface and groundwater), recycled water, drinking water treatment, groundwater remediation, and brackish and seawater desalination."

West Basin has been conducting testing and research into responsible ocean desalination since 2001. Some of this research has helped inform the development of the first-ever regulations for ocean desalination in California, approved by the State

Water Resources Control Board in 2015. With these new regulations, West Basin could potentially add a new potable water source to its water supply portfolio in addition to non-potable and indirect potable recycled water.

West Basin's experience in recycled water treatment has provided it with substantial knowledge on methods used for salt removal from water supplies. This experience has proven useful to West Basin in pursuing both groundwater and ocean water desalination programs to further develop local water supplies. Since 1993, West Basin has operated the C. Marvin Brewer Desalter Facility to treat brackish (salt laden) groundwater that exists on the inland side of the West Coast Seawater Barrier. In 2001 West Basin also began a stepwise program to explore the systematic development of an environmentally responsible ocean water desalination facility.

This stepwise approach has been based on scientific research and testing with a small pilot facility to test basic treatment technology. Following the pilot, West Basin recently completed operation of the Ocean Water Desalination Demonstration Facility and Water Education Center to evaluate and demonstrate ocean protection, energy recovery and cost reduction technologies. This approach will ensure a full-scale ocean water desalination facility will be developed in a cost and energy efficient manner that also protects the ocean and environment. Research results from the Demonstration Facility have been shared throughout the water industry and worldwide in the Comprehensive Report via the West Basin web site.

As noted in Chapter 5, Water Reliability, West Basin's multiple dry year analysis indicates that an appropriately sized 20 million gallons per day (MGD) ocean desalination facility will provide the quantity of water necessary to make up the expected shortfall in imported water supplies under future drought conditions. The analysis in Chapter 5 identifies a Regional Shortage Level 3, or an approximate 15% supply cutback by Metropolitan, similar to what has been experienced twice in the last seven years. In the event that future shortages are more severe due to higher cutbacks in imported water supplies a 20 MGD ocean desalination facility may not be sufficient to close the supply gap. Because desalination technology is modular in nature, future expansions of the project can be contemplated to better balance reliability. However, West Basin is only considering a 20 MGD ocean desalination project as part of the 2015 update to the UWMP.

10.1 Ocean Desalination Process

Desalination is the process of removing salinity from ocean water to provide a consumable water supply. Typical salt content in ocean water is over 35,000 milligrams per Liter (mg/L) and U.S. Standards require drinking water salt levels to be below 100 mg/L. Today's ocean water desalination process removes salt, minerals and impurities from ocean water with cutting edge membrane technologies and uses the following general process as described on West Basin's website:

1. Intake System: ocean water is brought to the desalination facility through an intake system. Several different types of intake systems exist including open ocean intakes, screened intakes, subsurface intakes, and some facilities draw spent ocean water from a cooling system from an existing near-by power plant. The intakes are designed for marine protection and must be designed to inhibit growth that would clog the intake pipes or facility.
2. Filtration: filter the raw water to remove coarse material such as shells, sand, particles, and red tide material that can damage or prohibit the desalination process from occurring downstream. Filters can include sand filters, plastic disk filters, and cloth filters.
3. Ultrafiltration (UF) / microfiltration (MF): filtered water is passed through a membrane that has thousands of hollow strands with pores on the walls that are 5,000 times smaller than a pinhole to remove microscopic material. UF/MF are a low pressure membrane process that are designed to remove turbidity causing particles such as suspended solids, bacteria, colloidal matter, and proteins. The water is still very salty after this process and is not ready for human consumption.
4. Reverse osmosis: UF/MF water then passes through RO membranes for separation of fresh water molecules from salt and other dissolved compounds. RO is a pressure driven process where water passes through the molecular structure of a thin membrane that removes salts, minerals, and impurities resulting in 99.8 percent removal of dissolved compounds in ocean water. As RO requires high pressures, large pumps are required to drive the process and result in high energy costs. Figure 10-1 shows a diagram of the typical desalination process.

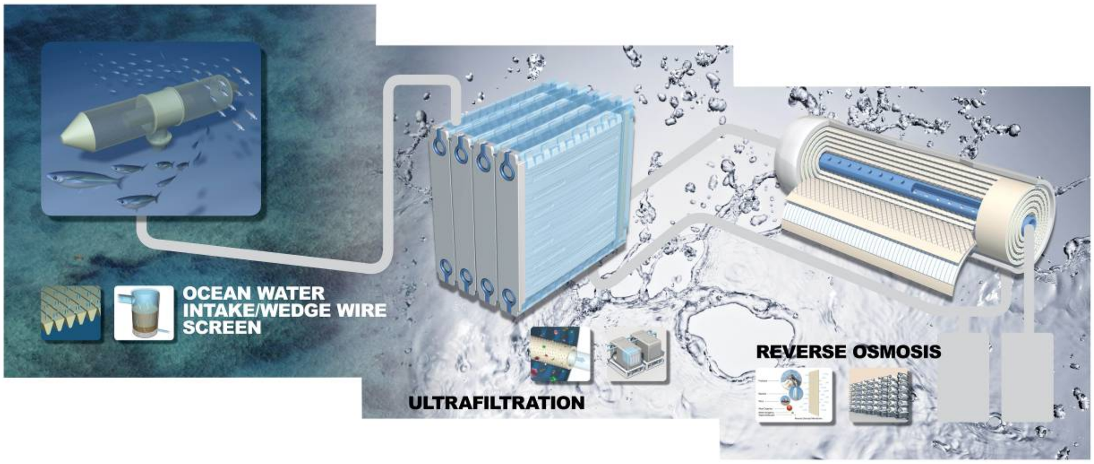


Figure 10-1: Desalination Process

5. Post Treatment: after the UF/MF and RO process, the water has to be re-mineralized and polished for human consumption as all minerals have been removed that are needed for water stabilization. The water is run through a

calcite filter or lime saturator followed by chlorine dosing for disinfection to meet drinking water standards.

6. Brine Disposal: The RO reject water, referred to as brine, must be disposed of. Brine consists of dissolved salt molecules and the concentration is twice as much as when the water was drawn into the facility.

Ocean water desalination has been considered cost prohibitive for many years compared to other sources of potable water in the West Basin service area. Recent advancements in membrane technologies and energy recovery systems, as well as the increasing cost of imported water supplies, have made ocean water desalination a more economically viable water source that is cost competitive with other drinking water sources.

10.2 West Basin's Ocean Water Desalination Pilot Project

In May 2002, West Basin initiated a multi-phase pilot study program to desalinate ocean water and evaluate the potential to provide desalinated water as a viable drinking water supply for the region. The pilot project was located at the El Segundo Power Generating Station in the city of El Segundo and the siting took advantage of the power generating station's existing cooling intake and outfall infrastructure (SPI, Ocean Water Desalination Pilot Program Final Comprehensive Report 2002-2009, September 2010). The pilot study began using MF pretreatment with RO, but expanded over the course of the study to include pre-straining, UF pretreatment, use of ocean water temperature versus warmed power plant ocean water discharge, latest generation RO membrane evaluations, seasonal variations in source water characteristics, water quality, and techniques for biogrowth control. The pilot operated through mid-2009 and desalinated approximately 20 gpm of ocean water. The goal of the pilot was to: 1) identify optimal performance conditions and 2) evaluate the water quality characteristics. The research findings are being shared among industry partners.

West Basin used membrane filtration and RO to evaluate whether the treatment process was effective for ocean water and performed extensive water quality monitoring on the raw ocean water, discharge concentrate, and product (treated) water quality. Tens of thousands of water quality test results indicated that the treatment approach provides a reliable and consistent water quality that meets all State and Federal drinking water standards. The water produced at the pilot project had a concentration of approximately 300 parts per million (ppm) of total dissolved solids which is lower than tap water in southern California. Figure 10-2 shows the MF and RO membrane technology used in the pilot project.

Microfiltration Unit

Example of Reverse Osmosis Units

Figure 10-2: Treatment Technologies Used at West Basin's Pilot Plant

The pilot study demonstrated the viability of ocean water desalination for West Basin, advanced the understanding of key process components on local ocean water conditions, and resulted in data that was not previously available.

Multi-year operation allowed exposure to variations in feed water quality and operational challenges (SPI, Ocean Water Desalination Pilot Program Final Comprehensive Report 2002-2009, September 2010).

West Basin's ocean water desalination pilot project was designed to be a regional and national asset and was an open, collaborative effort that has benefited the water industry. To fund the $7 million cost of the pilot project, West Basin partnered with major agencies within and related to the water industry, including the American Water Works Association Research Foundation, California Avocado Commission, City of Tampa Bay, DWR, East Bay Municipal Utility District, Long Beach Water Department, LADWP, Metropolitan, National Water Research Institute, San Diego County Water Authority, South Florida Water Management District, and the USBR.

10.3 Ocean Water Desalination Demonstration Facility Project

After the pilot project was completed, West Basin set up a small full-scale desalination demonstration project that evaluated several critical components of the ocean water desalination process including: operational protocols and challenges from piloting to establish environmentally-effective and sustainable intake technologies, determined an approach to energy usage and optimization/ minimization, developed process optimization protocols, determined operational requirements, established target water quality goals, and evaluated concentrate discharge management options (Malcolm Pirnie/Arcadis, Ocean Water Desalination Program Master Plan, January 2013). The Ocean Water Desalination Demonstration Facility (OWDDF) included an evaluation of passive screening and subsurface intake systems, energy consumption and optimization analysis and an intensive brine discharge study. The results provided a foundation for development of a full-scale design, permitting, and operations approach.

In early 2009, all necessary permits were received for construction of the OWDDF and Water Education Center located at the SEA Lab Marine Educational Facility in Redondo Beach. The data acquired from the pilot project was used to plan and develop the demonstration facility. The OWDDF was completed in 2010 and operated continuously until it was decommissioned in June 2014. The OWDDF withdrew 500,000 gallons of ocean water per day to perform various research and testing activities. 100,000 gpd of intake was treated to produce 50,000 gpd of water meeting drinking water standards. Although all drinking water standards were met, the permit required the treated water to be discharged back into the ocean. Figure 10-3 shows the components of the OWDDF within the facility.

Figure 10-3: West Basin's Ocean Water Desalination Demonstration Facility

The process performed for the pilot and demonstration projects developed a basis of design for future full-scale desalination plants by accomplishing the following goals:

- Evaluate environmentally responsible intake and concentrate discharge technologies and impacts;
- Optimize operation and maintenance procedures using full-scale elements;
- Optimize energy recovery device performance;
- Analyze water quality (as a continuation of the pilot plant testing); and
- Provide opportunities for public and stakeholder education.

10.4 Ocean Water Desalination Research Activities

Water Quality Integration Study

West Basin led a Desalinated Ocean Water Quality Integration Study in partnership with Metropolitan to evaluate potential impacts of a new, desalinated ocean water source being introduced into a distribution system that has previously only been exposed to Metropolitan imported water and/or groundwater sources.

Over the course of four months, a pipe loop study was conducted to evaluate corrosion-related impacts of stabilized desalinated ocean water when blended with Metropolitan water and a West Basin retail agency's groundwater on different pipe and household plumbing materials as part of a pilot-scale pipe loop as shown in Figure 10-4. The testing also investigated disinfectant residual stability and disinfection byproduct formation at the pilot-scale along with additional in-depth testing in the laboratory by Metropolitan.

Figure 10-4: Pipe Loop Set Up

Because the removal of calcium and alkalinity by the RO process makes the water corrosive to some pipe materials, the desalinated ocean water must be stabilized before entering distribution systems. Through stabilization, or post treatment, select minerals and other buffering constituents are added, including calcium and alkalinity, in combination with pH adjustment to condition the water. The desalinated product water from West Basin's OWDDF was stabilized using calcite (calcium carbonate) contactors prior to introducing the water to the pipe loops and bench-scale studies.

As the study commenced, a literature search and utility survey were conducted to review current knowledge and research water utility experience on desalinated ocean water stabilization and water quality targets for corrosion control. It was found that the major water quality parameters known to primarily influence pipe corrosion include alkalinity, calcium and pH. Calcium Carbonate Precipitation Potential (CCPP) and Langelier Saturation Index (LSI) are common indices for evaluating water corrosivity toward cementitious materials and for determining how protective films are applied to metal surfaces. Additional parameters such as chloride, sulfate, disinfectant, and dissolved oxygen may have impacts on the potential corrosion of piping materials but with a less definitive impact than the aforementioned parameters.

Overall, the introduction of a stabilized desalinated ocean water source into a potable water distribution system did not negatively impact water quality, corrosion or disinfectant residual. Furthermore, the study results indicate that desalinated ocean water can be successfully integrated into existing potable water distribution systems when stabilized and with management of initial chloramine decay (Hazen and Sawyer, Ocean Water Desalination Water Quality Integration Study, June 2014).

Subsurface Intake Feasibility Study

West Basin recently completed a subsurface seawater intake (SSI) study partially funded by USBR to determine the feasibility of different intake options for a full-scale desalination facility. West Basin's previous research of ocean water desalination intake strategies had focused on wedge-wire screen technology as shown on Figure 10-5. However, the California State Water Board's updated Ocean Plan requires a site-specific evaluation to determine the feasibility of SSIs before considering another type of intake system. The SSI study evaluation of sub-surface intakes was consistent with West Basin's planning assumptions for the project and confirmed in the Chapter 5 multi-dry year analysis. The production of 20 MGD of desalinated ocean water meeting all drinking water standards will require 40 MGD of ocean water as the source for the facility. The recovery rate for reverse osmosis based desalination of ocean water is approximately 50%, thus 20 MGD is produced as desalinated drinking water and the balance in concentrated brine discharged back to the ocean through a newly constructed outfall with pressurized diffusers in compliance with the standards set in the recently amended State Ocean Plan.

Furthermore, the SSI study developed a comprehensive, systematic procedure to evaluate the feasibility of subsurface intake technology at a given project site. The study evaluated the following seven technologies:

1. Vertical wells
2. Slant wells
3. Radial Collector Wells
4. Horizontal directional-drilled (HDD) wells
5. Seabed infiltration galleries (SIG)
6. Beach (surf zone) infiltration galleries (BIG)
7. Deep infiltration galleries (DIG)

The Study determined that none of the seven SSI technologies are feasible for a design intake rate of 40 MGD at the NRG Facility, and construction of SSIs outside of the NRG Facility would be subject to the same issues and challenges making these technologies not feasible.

The procedure will be detailed in a guidance manual that can be used by project proponents, regulators, and environmental stakeholders when evaluating intake technologies during the planning phase of an ocean water desalination project. West Basin's full-scale ocean water desalination facility will be used as a case study for the application of the guidance manual once completed. The case study would include performing several offshore and onshore field tests such as boring, offshore vibracore samples, and mapping of the ocean floor (Geosyntec, Feasibility Assessment of Subsurface Seawater Intakes, November 2015).

Figure 10-5: Potential Wedge-Wire Intake Configuration

Biofouling and Corrosion Study

West Basin recently completed an Intake Biofouling and Corrosion Study on the different screen materials and intake piping chemicals. When subsurface intake systems are impractical for a specific project, open intake systems are considered, which must minimize impingement and entrainment of sea life. The use of wedge wire screens at the intake was an approach demonstrated by West Basin at the OWDDF. This demonstration work has generated data documenting the effectiveness of the screens for reducing impingement and entrainment, but has also shown the importance of material selection, material quality control and proper installation of the screens. Also, the control of biological activity (e.g. mussels, bacteria and marine organisms) within the intake lines is a critical operational challenge. Attachment of mussels on the interior of intake piping is a common challenge in seawater desalination facilities, which is influenced by material selection and biofouling control strategies. Bacterial activity within the intake piping may promote biofilm formation within the downstream treatment processes. Several control strategies are in use at full-scale facilities and others are developmental.

The samples were exposed to the ocean environment and removed occasionally to assess biofouling and different rates of corrosion as shown in Figure 10-6. This study has provided West Basin with data to establish full-scale design criteria.

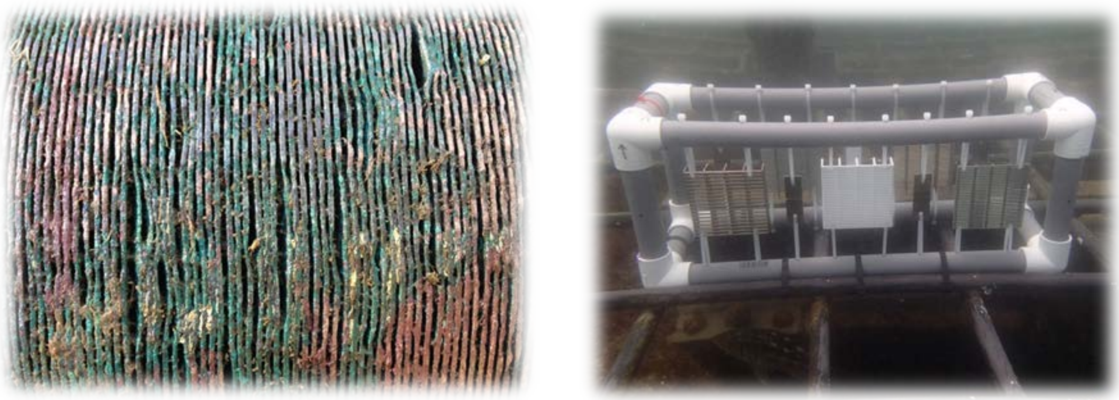


Figure 10-6: Observed Corrosion on a Screen and the Test Screen Structure

10.5 Future Ocean Water Desalination Project

10.5.1 Ocean Water Desalination Full-Scale Facility

The OWDDF evaluated the viability of a future, full-scale Ocean Water Desalination Facility capable of providing 20 MGD (21,500 AFY) of water in the initial phase at a site located in either Redondo Beach or El Segundo. With the findings being reviewed and a Program Master Plan (PMP) for the ocean water desalination project complete, the next step is to move forward with environmental permitting. The Environmental Impact Report (EIR) process has begun and will be complete by the end of 2016. Upon completion of the EIR, West Basin will evaluate whether to permit, finance, and construct a full-scale facility by 2023, as shown in Table 10-1. Potable water produced by the future ocean water desalination facility would be supplied to local and/or regional drinking water distribution systems.

Table 10-1: Opportunities for Desalinated Water

Sources of Water	Yield AFY	Start Date	Type of Use
Ocean Water	21,500	June 2023	Potable

Program Master Plan

The purpose of the PMP was to define the overall desalination program scope and key project components (intake, pretreatment, RO desalination system, post-treatment and product delivery) in the form of a technical study that can be used for the California Environmental Quality Act (CEQA)/EIR process and to support the basis of design of the full-scale facility. The PMP consisted of the following:

1. Conceptual System Design and Program Requirements
    a. Defined alternatives for key project components
    b. Assessed and prioritized alternatives
    c. Provided recommendations for narrowing down key components
2. Power Supply Development – estimated the electrical power consumption for the desalination facility and evaluated several power supply alternatives.
3. Project Entitlements and Acquisition – identified land purchase or lease agreements needed for program implementation along with plan and schedule for acquisition.
4. Environmental Review Plan – defined and scoped the environmental impact investigation requirements related to facilities and equipment to determine critical issues and decision points for environmental review.
5. Project Permitting Plan – provided major regulatory permits required along with critical issues and data to prepare permits.
6. Facility Operations & Maintenance Plan – identified operational requirements, resources, staffing, management, and other considerations required to operate and maintain a desalination facility.
7. Project Costs & Funding Plan – provided an overview of project costs for all plant sizes and capacity buildout scenarios and potential funding sources.
8. Project Delivery – provided an overview of Alternative Project Delivery options with advantages and disadvantages to each and scheduling and contractor procurement impacts. Alternative delivery options included:
    a. Design-Bid-Build
    b. Design-Build
    c. Design-Build Operate
    d. Construction Manager at Risk
    e. Design Build Own Operate Transfer
    f. Alliance

10.6 Brewer Desalter Treatment Facility

West Basin owns the C. Marvin Brewer Desalter Facility (Desalter) which began operating in July 1993. The Desalter was built on a site owned by California Water Service (CWS) in the City of Torrance where it removes chloride from groundwater impacted by seawater intrusion in the WCGB. The Desalter was initially intended to be a five year pilot program to determine if brackish water could be economically treated to drinking water standards.

The Desalter originally used two wells to pump brackish water from a saline plume remaining within the WCGB and treats the water using cartridge filters and RO as shown in Figure 10-7. The treated water from the Desalter is blended with potable water, stored on the CWS site in a 5 million gallon storage reservoir, and then delivered to the distribution system. Under the terms of an agreement with CWS, West Basin reimburses CWS to operate and maintain the Desalter.

In 2005, the original two wells were replaced with one, more productive well. This well has the capability to pump 1,600 to 2,400 AFY of brackish groundwater to be treated at the Desalter.

Figure 10-7: Brewer Desalter Treatment Facility

Appendix A

Urban Water Management Planning Act

Appendix B

2015 Urban Water Management Plan Checklist

Appendix C
Notice of Public Hearing

Appendix D

Resolution of Urban Water Management Plan Adoption

Appendix E

Notice of Urban Water Management Plan Preparation

Appendix F

Drought Rationing Plan Resolution

Appendix G
Drought Rationing Plan

Appendix H

Demand Management Measures Annual Reports

F WATER RATE ORDINANCE: NO. 1376

ORDINANCE NO. 1376

AN ORDINANCE SETTING THE AMOUNT OF WATER RATES AND CHARGES PURSUANT TO HEALTH AND SAFETY CODE § 5471 AND EL SEGUNDO MUNICIPAL CODE § 11-1-5.

The City Council of the City of El Segundo does ordain as follows:

SECTION 1. The City Council finds and declares as follows:

A. The City of El Segundo requires a reliable supply of water meeting current and anticipated water quality standards to protect the public general welfare, health and safety.

B. The purpose of water rates and charges is to protect the public health, safety and general welfare by providing a reliable and adequate supply of water meeting current and anticipated water quality standards for the residents of the City of El Segundo and to pay for the cost of providing such service.

C. There is a reasonable relationship between the amount of the rates and charges and the cost of services and facilities necessary to deliver water service to the residents and non-residential development of the City.

D. The City Council has previously set water rates and established administrative procedures for billing and collecting water rates. These actions are reflected, without limitation, in Resolution Nos. 4018 (adopted 07-01-97); 3922 (adopted 06-06-95); 3856 (adopted 03-01-94); 3831 (adopted 09-07-93); and 3807 (adopted 03-16-93).

E. This ordinance is adopted in accordance with Health and Safety Code § 5471 and El Segundo Municipal Code ("ESMC") § 11-1-5 to establish the City's current water rates.

F. This Ordinance is exempt from review under the California Environmental Quality Act (Cal. Pub. Res. Code §§ 21000, *et seq.*; "CEQA") and CEQA regulations (Cal. Code Regs. tit. 14, §§ 15000, *et seq.*) because it establishes, modifies, structures, restructures, and approves rates and charges for meeting operating expenses; purchasing supplies, equipment, and materials; meeting financial requirements; and obtaining funds for capital projects needed to maintain service within existing service areas. This Ordinance, therefore, is categorically exempt from further CEQA review under Cal. Code Regs. tit. 14, § 15273.

G. Notice regarding the water rates included in this ordinance was provided in accordance with Government Code § 54354.5 and a public hearing was held by the City Council on August 3, 2004 and continued to August 17, 2004.

H. The City Council has considered the evidence and testimony presented at the public hearing. Based in part upon that evidence, and the staff reports presented to the Council regarding this issue, the City Council believes that it is in the public interest to adopt this Ordinance.

SECTION 2. AMOUNT OF RATES AND CHARGES. Pursuant to ESMC § 11-1-5, the City Council establishes amount of water rates as set forth in attached Exhibit "A," which is incorporated by reference ("Water Charges").

SECTION 3. COST ESTIMATES. The City Manager, or designee, will periodically, but not less than annually, review the Water Charges to determine whether revenues from such charges are meeting actual cost of services and facilities needed to deliver water service to the residents and non-residential developments within the City. If the City Manager determines that revenues do not adequately meet costs, the City Manager will recommend to the City Council a revised rate and charge schedule to be adopted by this City Council by ordinance.

SECTION 4. To the extent that Resolution Nos. 4018 (adopted 07-01-97); 3922 adopted 06-06-95); 3856 (adopted 03-01-94); 3831 (adopted 09-07-93); and 3807 (adopted 03-16-93), and any other resolution or ordinance purporting to establish water rates or administrative procedures associated with such rates are incorporated into this Ordinance, they are repealed.

SECTION 5. Repeal of any provision of the El Segundo Municipal Code, or any other City resolution or ordinance herein will not affect any penalty, forfeiture, or liability incurred before, or preclude prosecution and imposition of penalties for any violation occurring before, this Ordinance's effective date. Any such repealed part will remain in full force and effect for sustaining action or prosecuting violations occurring before the effective date of this Ordinance.

SECTION 6. If any part of this Ordinance or its application is deemed invalid by a court of competent jurisdiction, the City Council intends that such invalidity will not affect the effectiveness of the remaining provisions or applications and, to this end, the provisions of this Ordinance are severable.

SECTION 7. The City Clerk is directed to certify the passage and adoption of this Ordinance; cause it to be entered into the City of El Segundo's book of original ordinances; make a note of the passage and adoption in the records of this meeting; and, within fifteen (15) days after the passage and adoption of this Ordinance, cause it to be published or posted in accordance with California law.

SECTION 8. This Ordinance will become effective on the thirty-first (31st) day following its passage and adoption.

PASSED AND ADOPTED this 7th day of September, 2004.

Kelly McDowell, Mayor

ATTEST:

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) SS
CITY OF EL SEGUNDO)

I, Cindy Mortesen, City Clerk of the City of El Segundo, California, do hereby certify that the whole number of members of the City Council of said City is five; that the foregoing Ordinance No. 1376 was duly introduced by said City Council at a regular meeting held on the 17th day of August, 2004, and was duly passed and adopted by said City Council, approved and signed by the Mayor, and attested to by the City Clerk, all at a regular meeting of said Council held on the 7th day of September, 2004, and the same was so passed and adopted by the following vote:

AYES: McDowell, Gaines, Boulgarides, Busch, Jacobson

NOES: None

ABSENT: None

ABSTAIN: None

Cathy Domann

Cindy Mortesen, City Clerk

APPROVED AS TO FORM:
Mark D. Hensley, City Attorney

By:

Karl H. Berger, Assistant City Attorney

WATER RATE SCHEDULES
EXHIBIT "A"

A. Basic Monthly Readiness-To-Serve Charges:

Meter Size	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
5/8"x3/4" and 3/4"	1.64	3.56	5.49	7.41	9.34	11.26
5/8"x3/4" and 3/4" Lifeline	0.82	1.78	2.74	3.71	4.67	5.63
1"	13.11	14.49	15.87	17.25	18.64	20.02
1" Lifeline	6.55	7.25	7.94	8.63	9.32	10.01
1-1/2"	18.01	19.48	20.94	22.41	23.87	25.34
2"	22.93	27.35	31.77	36.20	40.62	45.04
3"	39.31	51.72	64.12	76.53	88.93	101.34
4"	60.60	84.52	108.43	132.34	156.25	180.16
6"	116.29	174.11	231.92	289.73	347.55	405.36
8"	163.79	275.16	386.53	497.90	609.27	720.64
10"	262.06	434.84	607.63	780.42	953.21	1,126.00
12"	376.71	625.66	874.60	1,123.55	1,372.49	1,621.44
16"	655.17	1,100.65	1,546.13	1,991.61	2,437.08	2,882.56
20"	1,015.49	1,713.19	2,410.89	3,108.59	3,806.30	4,504.00

The basic monthly readiness-to-serve charges are subject to additional adjustment if the local consumer price index increases by more than 3.0 percent in a fiscal year.

Additional charges for water consumed per month are:

For first 2,000 cubic feet or 56 cubic meters of water used:
$1.2460 per 100 cubic feet or $0.4400 per cubic meter.
For next 3,000 cubic feet or 85 cubic meters of water used:
$1.3708 per 100 cubic feet or $0.4842 per cubic meter.
For next 5,000 cubic feet or 142 cubic meters of water used:
$1.4393 per 100 cubic feet or $0.5082 per cubic meter.

Additional lifeline charges for water consumed per month are:
For first 500 cubic feet or 14 cubic meters of water used:
$0.6231 per 100 cubic feet or $0.2200 per cubic meter.
For next 1,500 cubic feet or 42 cubic meters of water used:
$1.1924 per 100 cubic feet or $0.421 per cubic meter.
For next 3,000 cubic feet or 85 cubic meters of water used:
$1.3708 per 100 cubic feet or $0.4842 per cubic meter.
For next 5,000 cubic feet or 142 cubic meters of water used:
$1.4393 per 100 cubic feet or $0.5082 per cubic meter.

For monthly consumption over 10,000 cubic feet or 283 cubic meters: $1.5082 per 100 feet or $0.5324 per cubic meter. Potable water consumption charges will be increased by the same percentage as the West Basin Municipal Water District increases its charges to the City. For reclaimed water: The rate charged by West Basin Municipal Water District, plus $0.3056 per 100 cubic feet or $0.1079 per cubic meter.

B. Basic Bi-Monthly Readiness-To-Serve Charges:

Meter Size	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
5/8"x3/4" and 3/4"	3.28	7.13	10.97	14.82	18.67	22.52
5/8"x3/4" and 3/4" Lifeline	1.64	3.56	5.49	7.41	9.34	11.26
1"	26.22	28.98	31.74	34.51	37.27	40.04
1" Lifeline	13.11	14.49	15.87	17.25	18.64	20.02
1-1/2"	36.03	38.95	41.88	44.81	47.74	50.67
2"	45.86	54.70	63.55	72.39	81.24	90.08
3"	78.63	103.44	128.25	153.06	177.87	202.68
4"	121.21	169.03	216.85	264.68	312.50	360.32
6"	232.58	348.21	463.84	579.47	695.09	810.72
8"	327.58	550.32	773.06	995.80	1,218.54	1,441.28
10"	524.11	869.69	1,215.27	1,560.84	1,906.42	2,252.00
12"	753.42	1,251.31	1,749.20	2,247.10	2,744.99	3,242.88
16"	1,310.35	2,201.30	3,092.26	3,983.21	4,874.17	5,765.12
20"	2,030.97	3,426.38	4,821.78	6,217.19	7,612.59	9,008.00

The basic bi-monthly readiness-to-serve charges are subject to additional adjustment if the local consumer price index increases by more than 3.0 percent in a fiscal year.

Additional charges for water consumed per two month period are:
For first 4,000 cubic feet or 112 cubic meters water used:
$1.2460 per 100 cubic feet or $0.4400 per cubic meter.
For next 6,000 cubic feet or 170 cubic meters of water used:
$1.3708 per 100 cubic feet or $0.4842 per cubic meter.
For next 10,000 cubic feet or 284 cubic meters of water used
$1.4393 per 100 cubic feet or $0.5082 per cubic meter.

Additional lifeline charges for water consumed per two month are:
For first 1,000 cubic feet or 28 cubic meters of water used:
$0.6231 per 100 cubic feet or $0.2200 per cubic meter.
For next 3,000 cubic feet or 85 cubic meters of water used:
$1.1924 per 100 cubic feet or $0.421 per cubic meter.
For next 6,000 cubic feet or 85 cubic meters of water used:
$1.3708 per 100 cubic feet or $0.4842 per cubic meter.
For next 10,000 cubic feet or 142 cubic meters of water used:
$1.4393 per 100 cubic feet or $0.5082 per cubic meter.

For bi-monthly consumption over 20,000 cubic feet or 566 cubic meters: $1.5082 per 100 feet or $0.5324 per cubic meter. Potable water consumption charges will be increased by the same percentage as the West Basin Municipal Water District increases its charges to the City.

RECLAIMED WATER: The rate charged by West Basin Municipal Water District, plus $0.3056 per 100 cubic feet or $0.1079 per cubic meters.

Where two or more meters are installed in a battery or manifold the service connection size are used for computing the readiness-to-serve charge and the consumption charges are based on the combined total consumption indicated by all the readings of all meters in the battery or manifold.

C. Monthly Fire Service Charge:

Meter Size	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
2"	23.51	27.61	31.71	35.80	39.90	44.00
3"	35.27	41.41	47.56	53.71	59.85	66.00
4"	47.04	55.24	63.43	71.62	79.81	88.00
6"	70.54	82.83	95.13	107.42	119.71	132.00
8"	94.04	110.43	126.82	143.22	159.61	176.00
10"	117.67	138.14	158.60	179.07	199.53	220.00

The monthly fire service charges are subject to additional adjustment if the local consumer price index increases by more than 3.0 percent in a fiscal year.

D. Construction Water Rates: Construction water rates are as follows:

1. Water used on construction jobs are metered and the cost will be one and one-half times that set forth under the general rates cost;

2. Upon application for service, a charge of one hundred dollars ($100.00) will be made for the initial meter installation and an additional charge of seventy five dollars ($75.00) will be made for each meter relocation in fiscal year 2004-2005. These charges will increased by the local consumer price index for each subsequent fiscal year;

3. A returnable deposit of three hundred fifty dollars ($350.00) for each meter must be made upon application for service, which deposit shall secure the payment to the City of any damage suffered and of charges for water served and which has not otherwise been paid.

E. Unmetered Water Rates: For water use through an unmetered City fire hydrant, a charge will be made to cover the cost of the water used and other related expenses of the City Water System. The charge will be one hundred dollars ($100.00) for turning the hydrant on and off and for the first ten minutes of flow in fiscal year 2004-2005. These charges will be increased by the local consumer price index for each subsequent fiscal year.

An additional charge of $3.05 will be made for each minute after the initial ten minutes in fiscal year 2004-2005. Any use of water from a fire hydrant other than by the City will be subject to the foregoing charge. The additional charge will be increased in the subsequent fiscal years at the same rate that the West Basin Municipal Water District increases its potable water rates.

G WATER CONSERVATION ORDINANCE: ORDINANCE NO. 1433 AND 1437

ORDINANCE NO. 1433

AN ORDINANCE ADDING A NEW CHAPTER 10-5 TO THE EL SEGUNDO MUNICIPAL CODE ("ESMC") ESTABLISHING WATER CONSERVATION MEASURES IN ACCORDANCE WITH WATER CODE § 375 AND AMENDING ESMC §§ 1-2A-1, 1-2A-2, AND 1-2A-3 TO ENFORCE ESMC CHAPTER 10-5 WITH ADMINISTRATIVE CITATIONS.

The City Council of the City of El Segundo does ordain as follows:

SECTION 1: The City Council finds as follows:

A. Protecting, conserving, and managing water supplies is an issue of municipal concern. Contamination, drought, or damage to the City's potable water infrastructure can lead to a water emergency.

B. The City receives all of its water from the West Basin Municipal Water District ("WBMWD") and Metropolitan Water District of Southern California ("MWD"; collectively, "Districts").

C. It is in the public interest for the City to enact regulations for distribution and use of potable water including, without limitation, water conservation programs to encourage efficient water use and discourage waste.

SECTION 2: El Segundo Municipal Code ("ESMC") §§ 1-2A-1, 1-2A-2, and 1-2A-3 are amended to read as follows:

"1-2A-1: Purpose.

This chapter is adopted pursuant to the city's police powers and Government Code § 53069.4 for the purpose of making any violations of El Segundo Municipal Code §§ 5-4-1 to 5-4-13 (entitled "*Storm Water and Urban Runoff Pollution Control*") and §§ 10-5-1 to 10-5-23 (entitled "*Water Conservation*") subject to an administrative fine and to set forth the procedures for the imposition and collection of such fines.

1-2A-2: Applicability.

This chapter provides for administrative citations that are in addition to all other legal remedies, criminal or civil, which the city may pursue to address violations of the Storm Water Code and Water Conservation Code. The use of this chapter is at the sole discretion of the code enforcement officer.

1-2A-3: Definitions:

Unless the contrary is stated or clearly appears from the context, the following definitions govern the construction of the words and phrases used in this chapter:

* * *

"Water Conservation Code" means §§ 10-5-1 to 10-5-24 of the El Segundo Municipal Code and any federal, state, or local regulation enforced by and through the Water Conservation Code including, without limitation, pertinent provisions of Titles 13 and 15 of this Code."

SECTION 3: A new Chapter 10-5, entitled *Water Conservation*, is added to the ESMC to read as follows:

"CHAPTER 10-5

WATER CONSERVATION

10-5-1: Purpose.

This Chapter is adopted pursuant to Water Code § 375 for the purpose of establishing water conservation requirements and implementing contingency measures in the event of water shortages.

10-5-2: Definitions.

Unless the contrary is stated or clearly appears from the context, the following definitions govern the construction of the words and phrases used in this Chapter.

"Impervious surface" means a constructed or modified surface that cannot effectively percolate water. The terms includes, without limitation, sidewalks, driveways, gutters, and roads.

"Person" means a natural or corporate person who receives potable water service from the City.

"Programmed" means a weather-based or senor-based irrigation controller that was programmed in accordance with manufacturer's instructions and site-specific conditions.

"Responsible person" means the person responsible for daily operations of each residential or commercial premises located within the City's jurisdiction including, without limitation, the property owner.

"Sensor-based irrigation controller" means an irrigation controller that operates based upon input received from any combination of sensors such as rain, light, and soil moisture, installed within or around an irrigated landscape area.

"Weather-based irrigation controller" means an irrigation controller that operates based on evapotranspiration rates and historic or real-time weather data.

10-5-3: Water Conservation Program.

All water customers are required to adopt and put into use at the earliest possible date drought water conservation programs.

10-5-4: Repair of Plumbing, Sprinkler and Irrigation System.

Responsible persons must, as soon as practicable, but not later than forty-eight (48) hours after such person first discovers water leaks, commence repair of any leaking pipes, faucets, plumbing fixtures, other water service appliances, sprinklers, watering or irrigation systems, or distribution systems and promptly complete such repair work, unless a waiver is obtained from the City.

10-5-5: Watering/Irrigation.

Except as otherwise provided by this Section, it is unlawful for any person to water their lawn or landscaping or permit their lawn or landscaping to be watered between the hours of nine (9:00) AM and five (5:00) PM. It is unlawful for any person to water their lawn or landscaping or permit their lawn or landscaping to be watered for a period longer than fifteen (15) minutes per station each day. Notwithstanding these prohibitions, the following is permitted:

A. Persons may operate an irrigation system between 9:00 AM and 5:00 PM for the purpose of installing, repairing or routine maintenance of the same;

B. Persons may water between the hours of 9:00 AM and 5:00 PM using any of the following methods:

   1. Properly programmed weather-based and/or sensor-based irrigation controllers;

   2. Drip irrigation;

   3. By hand, using a bucket; or

   4. By hand, using a hose with an automatic shutoff nozzle.

10-5-6: **Miscellaneous Restrictions**. The following are unlawful for any person:

A. Allowing grass, lawns, groundcover, shrubbery, and open ground to be watered at any time while it is raining.

B. Operating landscape irrigation system(s) that allow overspray or excess runoff onto impervious surfaces (such as sidewalks, driveways, v-ditches, gutters and roadways).

C. To use a water hose to wash any vehicle including, without limitation, cars, trucks, boats, trailers, recreational vehicles, or campers, or any other aircraft, tractor, or any other vehicle, or any portion thereof, unless the hose is equipped with an automatic shutoff nozzle. Except for individual residential vehicle washing, all wash water from vehicle washing/cleaning activity must be prevented from discharging to the stormwater drainage system.

10-5-7: **Commercial Car Washes.**

A. It is unlawful for commercial car wash facilities to permit the washing of any boat or vehicle in such facility or on its premises, other than by the following methods:

   1. Use of mechanical automatic car wash facilities utilizing water recycling equipment or utilizing recycled water;

2. Use of a hose that operates on a timer for limited time periods and shuts off automatically at the expiration of the time period;

3. Use of a hose equipped with an automatic shutoff nozzle; or

4. Use of bucket and hand washing.

B. All wash/rinse water must be captured and recycled or discharged into the sanitary sewer system.

C. All new commercial conveyor car wash facilities must be equipped with a water recycling system.

10-5-8: Washing of Equipment and Machinery.

It is unlawful for any person to use a water hose to wash any type of equipment or machinery, or any portion thereof, unless the hose is equipped with an automatic shutoff nozzle. All wash water from such washing/cleaning activity must be prevented from discharging to the stormwater drainage system.

10-5-9: Cleaning of Structures.

It is unlawful for any person to use water through a hose to clean the exterior of any building or structure unless such hose is equipped with a shutoff nozzle. All wash water from such activity must be prevented from discharging to the stormwater drainage system.

10-5-10: Cleaning of Surfaces.

It is unlawful for any person to use water through a hose to clean any sidewalk, driveway, roadway, parking lot, or any other outdoor paved or hard surfaced area, unless all wash water from such activity is prevented from discharging to the stormwater drainage system.

10-5-11: Water Spillage.

Every person must minimize water spillage into streets, curbs, or gutters and minimize runoff beyond the immediate area of use. Every person is deemed to have under his/her control at all times his/her water distribution lines and facilities, and to know the manner and extent of his/her water use and excess runoff.

10-5-12: Swimming Pools and Spas.

It is unlawful for any person to empty and refill a swimming pool or spa except to prevent or repair structural damage or to comply with public health regulations. Discharge of pool water, other than directly to the sanitary sewer system, must be consistent with this Code with regard to stormwater. Discharge of pool filter backwash water to the stormwater drainage system is prohibited. All pools and spas must be equipped with a water recirculation device. The use of a pool/spa cover is encouraged to prevent evaporative water loss.

10-5-13: Fountains, Decorative Basins, Ponds, Waterways.

It is unlawful for any person to use water to operate or maintain levels in decorative fountains, basins, ponds, and waterways unless a recirculation device is in use. Discharge of water, other than directly to the sanitary sewer system, must be consistent with this Code with regard to stormwater. Discharge of filter backwash water to the stormwater drainage system is prohibited.

10-5-14: Cooling Systems.

No single pass cooling systems are permitted in new connections.

10-5-15: Commercial Laundry Facilities.

New commercial laundry facilities must be equipped with a water reclamation system for rinse water.

10-5-16: Visitor-Serving Facilities.

The owner and manager of each hotel, motel, restaurant, and other visitor-serving facility must ensure that such facility displays, in places visible to all customers, placards or decals approved by the City, promoting public awareness of the need for water conservation and/or advising the public that waste of water is prohibited.

10-5-17: Restaurants.

Restaurants in the City cannot serve water to restaurant customers, except upon request of the customer.

10-5-18: Construction.

A. It is unlawful to use potable water for compacting or dust control purposes in construction activities where there is a reasonably available source of recycled or other non-potable water approved by the California State Department of Health Services and appropriate for such use.

B. All water hoses used in connection with any construction activities must be equipped with an automatic shutoff nozzle when an automatic shutoff nozzle can be purchased or otherwise obtained for the size or type of hose in use.

10-5-19: Use of Hydrants.

It is unlawful for any person to utilize any fire hydrant for any purpose other than fire suppression or emergency aid, without first obtaining written approval from the City Manager, or designee.

10-5-20: Indiscriminate Use.

It is unlawful for any person to cause or permit the indiscriminate running of water not otherwise prohibited by this chapter which is wasteful and without reasonable purpose.

10-5-21: Public Health and Safety.

These regulations cannot be construed to limit water use which is immediately necessary to protect public health or safety.

10-5-22: Water shortage contingency measures.

The City Council by resolution is authorized to require or impose reductions in the use of water if such reductions are necessary in order for the City to comply with water use restrictions imposed by federal, state or regional water agencies or to respond to emergency water shortage conditions. Depending on the expected duration and severity of the shortage, these measures may include, without limitation, the following:

A. Prohibit the filling or emptying and refilling of swimming pools, excluding normal maintenance of water levels due to evaporation.

B. Prohibit the use of a temporary fire hydrant meter from the City, or otherwise using water through a temporary City water service.

C. Require all major water users to reduce their usage by the percentage determined by the City Manager, or designee, to be necessary to sustain adequate water supply for the City. Such percentage must be based both on the rate of supply to the City and the rate of current water demand.

D. Impose an additional water surcharge above and beyond the existing City water rates on all City residents, water users and water consumers who fail or refuse to abide by the requirements, restrictions and priorities adopted by the City in response to the emergency water shortage condition.

E. Suspend all sales and deliveries of City water, or use of City water, for construction or grading purposes.

F. Reduce or prohibit consumption or use of City water by residential, recreational, commercial, industrial and institutional water users for landscape irrigation purposes.

G. Initiate or implement additional or innovative actions to increase the supply of water available to the City and to conserve the City's existing water supply.

10-5-23: Relief from compliance.

The City Manager, or designee, may grant written waivers to persons who apply on forms supplied by the City for:

A. Prohibited uses of water if it is found that a waiver is necessary to prevent an emergency condition relating to health and safety, and if the person seeking a waiver demonstrates that he or she implemented water conservation measures in some other manner that achieves the objectives of this Chapter. No waiver can be granted for the filling of any decorative fountain, basin, pond, hot tub, spa or permanent swimming or wading pool, unless the filling occurs as the result of performing necessary leak repairs and unless the other provisions of this Section are met.

B. No waiver can be granted unless the person demonstrates that he or she has already achieved the maximum practical reduction in water consumption as can be achieved by the affected property or business. Any waiver granted must be based upon the water consumption rates of similar water users, properties or businesses.

10-5-24: Enforcement.

At least one written warning must be provided to persons upon the first violation of this Chapter. Second and subsequent violations may be enforced in accordance with applicable law including, without limitation, this Code. It is the code enforcement officer's responsibility to enforce this Chapter"

SECTION 4: CALIFORNIA ENVIRONMENTAL QUALITY ACT EXEMPTION. This ordinance is exempt from review under the California Environmental Quality Act

(California Public Resources Code §§ 21000, *et seq.*, "CEQA") and CEQA regulations (14 California Code of Regulations §§ 15000, *et seq.*) because it establishes rules and procedures to permit operation of existing facilities; minor temporary use of land; ensure maintenance, restoration and protection of the environment; and regulate normal operations of facilities for public gatherings. This Ordinance, therefore, is categorically exempt from further CEQA review under Cal. Code Regs. Title 14, §§ 15301, 15304(e), 15308, and 15323.

SECTION 5: PUBLIC NOTIFICATION. The City Manager, or designee, is directed to provide public notification regarding the regulations set forth in this ordinance through any reasonable means including, without limitation, newspaper publications, flyers contained within the City's utility bills, and advertising on the City's PEG cable channel.

SECTION 6: SAVINGS CLAUSE. Repeal of any provision of the SPMC or any other regulation by this Ordinance does not affect any penalty, forfeiture, or liability incurred before, or preclude prosecution and imposition of penalties for any violation occurring before, this Ordinance's effective date. Any such repealed part will remain in full force and effect for sustaining action or prosecuting violations occurring before the effective date of this Ordinance.

SECTION 7: SEVERABILITY. If any part of this Ordinance or its application is deemed invalid by a court of competent jurisdiction, the city council intends that such invalidity will not affect the effectiveness of the remaining provisions or applications and, to this end, the provisions of this Ordinance are severable.

SECTION 8: VALIDITY OF PREVIOUS CODE SECTIONS. If this the entire Ordinance or its application is deemed invalid by a court of competent jurisdiction, any repeal of the SPMC or other regulation by this Ordinance will be rendered void and cause such SPMC provision or other regulation to remain in full force and effect for all purposes.

SECTION 9: The City Clerk is directed to certify the passage and adoption of this Ordinance; cause it to be entered into the City of El Segundo's book of original ordinances; make a note of the passage and adoption in the records of this meeting; and, within fifteen (15) days after the passage and adoption of this Ordinance, cause it to be published or posted in accordance with California law.

SECTION 10: This Ordinance will take effect on January 1, 2010.

PASSED AND ADOPTED this 3rd day of November 2009.

Kelly McDowell, Mayor

ATTEST:

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) SS
CITY OF EL SEGUNDO)

I, Cindy Mortesen, City Clerk of the City of El Segundo, California, do hereby certify that the whole number of members of the City Council of said City is five; that the foregoing Ordinance No. 1433 was duly introduced by said City Council at a regular meeting held on the 6 day of OCT. 2009, and was duly passed and adopted by said City Council, approved and signed by the Mayor, and attested to by the City Clerk, all at a regular meeting of said Council held on the 3 day of NOV. 2009, and the same was so passed and adopted by the following vote:

AYES: **McDowell, Busch, Brann, Fisher, Jacobson**

NOES: **None**

ABSENT: **None**

ABSTAIN: **None**

Cathy Domann
Cindy Mortesen, City Clerk

APPROVED AS TO FORM:
Mark D. Hensley, City Attorney

By:
Karl H. Berger, Assistant City Attorney

ORDINANCE NO. 1437

AN ORDINANCE AMENDING EL SEGUNDO MUNICIPAL CODE CHAPTER 10-2, ENTITLED "WATER CONSERVATION IN LANDSCAPING," IN ITS ENTIRETY IN ACCORDANCE WITH GOVERNMENT CODE § 65595(C).

The City Council does ordain as follows:

SECTION 1: Chapter 10-2 of the El Segundo Municipal Code ("ESMC"), entitled "Water Conservation in Landscaping," is amended in its entirety to read as follows:

"Chapter 2

WATER CONSERVATION IN LANDSCAPING

10-2-1: PURPOSE:

This Chapter is adopted in accordance with Government Code § 65595(c) for the purpose of complying with California law and promoting water conservation. This Chapter may be referred to as the "Water Conservation In Landscaping Standards." The Water Conservation In Landscaping Standards are intended to promote water conservation while allowing the maximum possible flexibility in designing healthy, attractive, and cost effective water efficient landscapes.

10-2-2: DEFINITIONS:

Unless the contrary is stated or clearly appears from the context, the following definitions govern the construction of the words and phrases used in this chapter. Words and phrases not defined by this chapter have the meanings stated in the Water Conservation in Landscaping Act (Government Code §§ 65591, *et seq.*); regulations promulgating the Water Conservation in Landscaping Act; this Code; and any successor statutes or regulations.

BACKFLOW PREVENTION DEVICE: means a safety device used to prevent pollution or contamination of the potable water supply due to the reverse flow of water from the irrigation system.

CERTIFICATE OF COMPLETION: means the document that certifies that the landscape design plan, irrigation scheduling parameters and landscape project has been installed per the approved Landscape Documentation Package. An irrigation audit report must also be included to obtain the final certificate of completion for the project.

CERTIFIED IRRIGATION DESIGNER: means a person certified to design irrigation systems by an accredited academic institution a professional trade organization or other program such as the US Environmental Protection Agency's WaterSense irrigation designer certification program and Irrigation Association's Certified Irrigation Designer program.

CHECK VALVE: or "anti-drain valve" means a valve located under a sprinkler head, or other location in the irrigation system, to hold water in the system to prevent drainage from sprinkler heads when the sprinkler is off.

CLIMATE ZONE: Plant species as described in the Sunset Western Climate Zone System for the City of El Segundo (Zone No. 24).

DESIGNER: A person qualified to practice landscape architecture and/or irrigation design.

DRIP IRRIGATION: means any non-spray low volume irrigation system utilizing emission devices with a flow rate measured in gallons per hour. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

ECOLOGICAL RESTORATION PROJECT: means a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

EMITTER: means a drip irrigation emission device that delivers water slowly from the system to the soil.

ETo: means Reference Evapotranspiration which is the approximation of water loss expressed in inches per year from a field of 4-to-7-inch-tall cool season grass that is not water stressed.

FLOW RATE: means the rate at which water flows through pipes, valves and emission devices, measured in gallons per minute, gallons per hour, or cubic feet per second.

"Guidelines" or the "City of El Segundo Land Development Provisions for Landscaping and the Guidelines for Implementation of Water Efficient Landscape" means regulations separately adopted by City Council resolution, and incorporated by reference into this chapter, providing specific regulations for water conservation.

HARDSCAPES: means any durable material (pervious and non-pervious).

HYDROZONE: means a portion of the landscaped area having plants with similar water needs. A hydrozone may be irrigated or non-irrigated.

INFILTRATION RATE: means the rate of water entry into the soil expressed as a depth of water per unit of time (e.g., inches per hour).

INVASIVE PLANT SPECIES: means species of plants not historically found in California that spread outside cultivated areas and can damage environmental or economic resources. Invasive species may be regulated by county agricultural agencies as noxious species. "Noxious weeds" means any weed designated by the Weed Control Regulations in the Weed Control Act and identified on a Regional District noxious weed control list. Lists of invasive plants are maintained at the California Invasive Plant Inventory and USDA invasive and noxious weeds database.

IRRIGATION AUDIT: means an in-depth evaluation of the performance of an irrigation system conducted by a Certified Landscape Irrigation Auditor. An irrigation audit includes, but is not limited to: inspection, system tune-up, system test with distribution uniformity or emission uniformity, reporting overspray or runoff that causes overland flow, and preparation of an irrigation schedule.

IRRIGATION SYSTEM: A complete connection of system components, including the water distribution network and the necessary irrigation equipment and downstream from the backflow prevention device.

LANDSCAPE ARCHITECT: means a person who holds a license to practice landscape architecture in the state of California Business and Professions Code, Section 5615.

LANDSCAPE AREA: means all the planting areas, turf areas, and water features in a landscape design plan subject to the Maximum Applied Water Allowance calculation. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation).

LANDSCAPE DOCUMENTATION PACKAGE: means the documents required to be provided to the City for review and approval of landscape design projects, as described in the Implementation procedures of this Water Conservation In Landscaping Standards.

LANDSCAPE PROJECT: means total area of landscape in a project as defined in "landscape area" for the purposes of this Chapter, meeting requirements of this Water Efficient Chapter.

LATERAL LINE: means the water delivery pipeline that supplies water to the emitters or sprinklers from the valve.

LOCAL WATER PURVEYOR: means any entity, including a public agency, city, county, or private water company that provides retail water service.

LOW VOLUME IRRIGATION: means the application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as drip, drip lines, and bubblers. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

MODEL HOME: means a facility used exclusively for the promotion and sale of homes similar to the model.

MULCH: means any organic material such as leaves, bark, straw, compost, or inorganic mineral materials such as rocks, gravel, and decomposed granite left loose and applied to the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature, and preventing soil erosion.

NEW CONSTRUCTION: means, for the purposes of this chapter, a new building with a landscape or other new landscape such as a park, playground, or greenbelt without an associated building.

OVERSPRAY: means the irrigation water which is delivered beyond the target area.

PERMIT: means an authorizing document issued by local agencies for new construction or rehabilitated landscape.

PERVIOUS: means any surface or material that allows the passage of water through the material and into the underlying soil.

PLANTING AREA: The parcel area less building pad, driveway, patio, deck, walkway and parking area. "Planting area" includes water bodies (i.e., fountains, ponds, lakes) and natural areas.

PLANTING PLAN: A planting plan shall identify location, spacing, numbers, container planting sizes of all plant materials including common and botanical names.

PRECIPITATION RATE: means the rate of application of water measured in inches per hour.

RAIN SENSOR: or "rain sensing shutoff device" means a component which automatically suspends an irrigation event when it rains.

RECYCLED WATER: "reclaimed water", or "treated sewage effluent water" means treated or recycled waste water of a quality suitable for non-potable uses such as landscape irrigation and water features. This water is not intended for human consumption.

REHABILITATED LANDSCAPE: Any landscaping project greater or equal to 2,500 square feet that requires a permit, plan check, or design review, and the planting area in which fifty percent (50%) of existing landscape materials are replaced or modified within any twelve (12) month period. Examples include a change of plants or ground cover, and grading modifications within any twelve (12) month period.

RUNOFF: means water which is not absorbed by the soil or landscape to which it is applied and flows from the landscape area. For example, runoff may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or when there is a slope.

SOIL TEXTURE: means the classification of soil based on its percentage of sand, silt, and clay.

SPECIAL LANDSCAPE AREA: (SLA) means an area of the landscape dedicated solely to edible plants, areas irrigated with recycled water, water features using recycled water and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface.

SPRINKLER HEAD: means a device which delivers water through a nozzle.

TURF: Means a ground cover surface of mowed grass. Annual bluegrass, Kentucky bluegrass, perennial ryegrass, Red fescue, and tall fescue are cool grasses. (Minimize cool season turf).

Bermudagrass, Kikuyugrass, Seashore Paspalum, St. Augustinegrass, Zoysiagrass, and Buffalo grass are warm-season grass.

VALVE: means a device used to control the flow of water in the irrigation system.

WATER BUDGET CALCULATION: means the Maximum annual Applied Water Allowance calculated using this formula:

<u>MAWA = (ETo) (0.62) [0.7 x LA + 0.3 x SLA]</u>

MAWA = Maximum Applied Water Allowance (maximum gallons per year available for the project).
Eto = Reference Evapotranspiration (33.0 inches per year for the City of El Segundo).
0.7 = ET Adjustment Factor (as designated by the state of California).
LA = Landscape Area (square feet, including SLA)
0.62 = Conversion Factor (inches to gallons)
SLA = Special Landscape Area (square feet)
0.3 = The additional ET Adjustment Factor for the Special Landscape Area

WATER FEATURE: means a design element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied). The surface area of water features is included in the high water use hydrozone of the landscape area. Constructed wetlands used for on-site wastewater treatment or stormwater best management practices that are not irrigated and used solely for water treatment or stormwater retention are not water features and, therefore, are not subject to the water budget calculation.

10-2-3: APPLICATION OF POLICIES:

A. Applicability. This chapter applies to new industrial, commercial, office and institutional developments; to public and private parks and other public recreational areas; to multi-family (3 or more units) residential and planned unit development common areas; to model home complexes; and to City road medians and corridors.

B. Nonapplicability: This chapter is not applicable to:

1. Cemeteries.

2. Registered historical sites.

3. Ecological restoration projects that do not require a permanent irrigation system.

4. Mined-land reclamation projects that do not require a permanent irrigation system.

5. Any project with a landscaped area less than two thousand five hundred (2,500) square feet, unless the Director of Recreation and Parks determines that substantial compliance with the purpose of this Chapter requires that a landscape plan be submitted.

6. Any project or planting area that utilizes one hundred percent (100%) reclaimed water.

C. Exemptions. The City Manager, or designee, may authorize exemptions to any of the design and improvement standards in this Chapter. Such exemptions may be granted if the City Manager, or designee, finds that the proposed design or improvement is in substantial compliance with the purpose and intent of this Chapter.

10-2-4: **SUBMITTAL REQUIREMENTS:**

Applicants must submit the following:

A. A *Landscape Documentation Package* for review and approval.

B. The *Landscape Documentation Package* must include a certification by an appropriately licensed professional stating that the landscape design and water use calculations were prepared by or under the supervision of the licensed professional and are certified to comply with the Water Conservation in Landscaping Act.

C. The *Landscape Documentation Package* must be prepared in accordance with the Guidelines and this chapter. Such plans must be submitted and approved before the City issues building permits to comply with this Chapter.

D. Landscaping must be designed to be irrigated at not more than 0.7 of the reference evapotranspiration (ETo) and cannot exceed the MAWA.

E. Before the City issues a building permit, a landscape plan application must be submitted and reviewed in accordance with this Chapter. Applications for landscape plan approval must be filed by the owner of the affected property or his agent, or by a public entity to which the provisions of the Chapter apply, on forms furnished by the Director of Planning and Building Safety.

F. No landscape plan application can be approved unless the Director of Planning and Building Safety finds that the plan compliments the design of the project, is consistent with the provisions of this Chapter; compatible with adjacent existing or future public landscaped areas, and with the elevations and appearances with existing structures located upon lots within the immediate vicinity of the lot which is the subject of such application.

10-2-5: LANDSCAPING DESIGN REQUIREMENTS:

A. Landscape Documentation Plan: Each landscape plan must include the following elements including, without limitation, the following:

1. Landscaping Design Plan: The planting plan must identify location, spacing, numbers, container sizes of all plant materials including common and botanical names, drawn on project base sheets in a clear and legible fashion in accordance with the policies established to implement the provisions of this Chapter.

2. Where possible, landscaping should be installed in the fall, in order to establish plant materials when they will benefit most from winter rains.

3. Selection of water conserving plants and turf species for the El Segundo Climate Zone (based on the Sunset Western Climate Zone System which takes into account temperature, humidity, elevation, terrain, latitude, and varying degrees of continental and marine influence on local climate).

4. Recognize the horticultural attributes of plants (i.e., mature plant size, invasive surface roots) to minimize damage to property or infrastructure (e.g., buildings sidewalks, and power lines).

5. Selection of plants based on disease and pest resistance.

6. Lawns are limited to not more than 25% of the landscape area, and may not be used in areas less than 5 feet wide.

7. Turf is discouraged on slopes greater than 25% where the toe of the slope is adjacent to an impermeable hardscape and where 25% means 1 foot of vertical elevation change for every 4 feet of horizontal length (rise divided by run x 100 = slope percent).

8. Turf or grass must be a water-conserving species;

9. The planting of high water use plants is limited to non-turf landscape area. The remaining landscape must be planted with low and moderate water use plant materials;

10. Plants having similar water requirements should be grouped together in distinct hydrozones.

11. Consider the solar orientation for plant placement to maximize summer shade and winter solar gain.

B. Irrigation System Design Criteria: The irrigation plan must identify all components of the irrigation system drawn on project base sheets in a clear and legible fashion in accordance with the policies established to implement the provisions of this Chapter. The following Design Irrigation Elements must be included:

1. Irrigation systems must utilize recycled water if such lines are readily available adjacent to the site.

2. Irrigation system must identify potable or recycled water supply sources for meter.

3. A dedicated water meter is required on all landscapes over 5,000 square feet.

4. All irrigation systems must be designed to avoid runoff, overspray, low-head drainage, and other similar conditions where water flows off-site or on to paved areas.

5. Spray irrigation shall be separated from paved surfaces by landscape treatment that is not spray irrigated.

6. Spray irrigation shall not be used in medians and other narrow planting areas (five feet or less). Narrow areas

less than eight feet wide must be irrigated with subsurface or low volume irrigation.

7. Plants that require different amounts of water or plants that are located in separate hydrozones must be irrigated by a separate irrigation circuit.

8. Irrigation equipment should include a time controller that includes multiple programming capability, rain sensing devices, anti drain check valves, pressure regulation where PSI exceeds 80, and matched precipitation spray heads on each spray irrigation valve.

9. Weather-based or other sensor based self-adjusting irrigation controllers must be provided.

10. Rain sensors must be installed for each irrigation controller.

11. Automatic sprinkler timer must be programmed to water in the early morning or late hours during the day.

12. Where feasible, trees shall be placed on separate valves from shrubs, groundcovers and turf.

13. The estimated water use calculations for the project must be identified. The water use calculations must be certified by the landscape professional that it meets the Water Conservation in Landscaping Act requirements and bear the signature of the landscape professional as required by Business and Professions Code § 5615.

C. The following Soil management report or specifications must be included:

1. Soil conditioning notes should be included. The soil notes may include a description of: soil texture, water holding capacity, infiltration rate, PH, total soluble salts, sodium, percentage of organic material, and implementation of recommended amendments to the soil. The recommended amendments for the soil must be appropriate for the plants selected.

2. A minimum two (2) inch layer of mulch must be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting ground covers, or direct seeding applications where mulch is contraindicated.

One and one-half inches of mulch is acceptable for areas of ground cover planted from flats.

3. Stabilizing mulching products must be used on slopes.

4. A grading design plan must be included if significant changes are proposed for the project. The grading plan must be prepared to minimize soil erosion, runoff, and water waste. The grading plan must show storm water retention improvements, if applicable. The grading and drainage patterns must show that the landscape irrigation and normal rainfall remains within the property and does not drain to non-permeable hardscape surface finishes. The grading plan must be certified stating that the project complies with the chapter for the efficient use of water in the grading design plan and must bear the signature of a licensed professional as authorized by State law.

10-2-6: WATER FEATURES:

Decorative water features such as pools, ponds, and waterfalls used in landscaped areas must incorporate recycling of water, and must use recycled water where it is feasible, cost effective, and meets health standards.

10-2-7: LANDSCAPE MAINTENANCE:

The property owner must permanently and continuously maintain landscaping and irrigation in a neat, clean and healthy condition, including removal of litter, proper pruning, mowing of lawns, weeds, fertilizing, and watering; and replacement of diseased and/or dead plants and malfunctioning or missing irrigation system components.

The water purveyor will monitor the annual water use at each project site and may require that corrections be made if water consumption substantially exceeds the average yearly water use for landscaping areas.

10-2-8: MODEL HOME LANDSCAPING:

For each subdivision with model homes, the developer must submit a landscape plan and install landscaping for each model home, incorporating the policies of this Chapter and including:

A. Signs identifying elements of the water-conserving landscape and irrigation system design placed around the model.

B. Literature describing water conserving landscapes to be available to individuals touring the model.

10-2-9: VERIFICATION OF COMPLIANCE:

A. Landscape Certificate of Completion. Upon completion of the installation of the landscaping, the landscape architect, irrigation designer, contractor, or owner must certify that the landscape complies with all policies of this Chapter. A Certificate of Completion must be obtained from the City. City staff must verify through the inspection process that all equipment, sprinklers and plant species installed conform to the approved Landscape Documentation Package plans for the project. Certification must be accomplished by completion of a landscape certificate on a form approved by the Planning and Building Safety Director. Additionally, a certified landscape auditor must perform a landscape irrigation audit to obtain final certificate of occupancy. The landscape irrigation audit and landscape certificate for the landscape and irrigation system must be reviewed and approved by the Building Official before final certificate of occupancy is issued. Failure to submit a complete and accurate landscape certificate will delay final approval of the project and/or discontinue water service.

B. The following items must be submitted for review to request a Certificate of Compliance:

1. Certificate of plant installation.
2. Final soils information.
3. Irrigation scheduling parameters.
4. Irrigation Audit Report.
5. Maintenance schedules.

C. The verification of compliance of the landscape installation with approved plans must be obtained through the certificate of completion in conjunction with a Certificate of Occupancy.

D. The certificate of completion must be accompanied by an irrigation audit that contains the following:

1. Operation pressure of the irrigation system.
2. Distribution uniformity of overhead irrigation.
3. Precipitation rate of overhead irrigation

4. Report of any overspray or broken irrigation equipment

E. Irrigation schedule including:

1. Plant establishment irrigation schedule.

2. Regular irrigation schedule by month including: plant type, root depth, soil type, slope factor, shade factor, irrigation interval (days per week), irrigation day, gallons per minute for each valve, precipitation rate, distribution uniformity and monthly estimated water use calculations.

F. An irrigation maintenance schedule timeline must be attached to the certificate of completion that includes:

1. Routine inspections, adjustment and repairs to the irrigation system, aerating and dethatching turf areas, replenishing mulch, fertilizing, pruning and weeding.

2. A final inspection must be performed by City staff to verify compliance. The final building permit approval will not be complete until the landscape inspection is approved.

3. A certified landscape auditor must perform a landscape irrigation audit to obtain Certificate of Occupancy.

4. Irrigation of all landscaped areas must be conducted in a manner conforming to the rules and requirements, and will be subject to penalties and incentives for water conservation and water waste prevention as determined and implemented by the local water purveyor and the City.

10-2-10: **PENALTIES FOR VIOLATION AND ENFORCEMENT**:

A. It is unlawful for any person to violate, to cause, or to maintain a violation of this Chapter.

B. It is unlawful to any person to remove or cause removal of water-conserving irrigation valves or equipment contrary to the provisions of this Chapter."

SECTION 2: CALIFORNIA ENVIRONMENTAL QUALITY ACT EXEMPTION. This ordinance is exempt from review under the California Environmental Quality Act (California Public Resources Code §§ 21000, *et seq.*, "CEQA") and CEQA regulations (14 California Code of Regulations §§ 15000, *et seq.*) because it establishes rules and procedures to permit operation of existing facilities; minor temporary use of land; ensure maintenance, restoration and protection of the environment; and regulate normal operations of facilities for public gatherings. This Ordinance, therefore, is categorically exempt from further CEQA review under Cal. Code Regs. Title 14, §§ 15301, 15304(e), 15308, and 15323.

SECTION 3: PUBLIC NOTIFICATION. The City Manager, or designee, is directed to provide public notification regarding the regulations set forth in this ordinance through any reasonable means including, without limitation, newspaper publications, flyers contained within the City's utility bills, and advertising on the City's cable channel.

SECTION 4: SAVINGS CLAUSE. Repeal of any provision of the ESMC or any other regulation by this Ordinance does not affect any penalty, forfeiture, or liability incurred before, or preclude prosecution and imposition of penalties for any violation occurring before, this Ordinance's effective date. Any such repealed part will remain in full force and effect for sustaining action or prosecuting violations occurring before the effective date of this Ordinance.

SECTION 5: SEVERABILITY. If any part of this Ordinance or its application is deemed invalid by a court of competent jurisdiction, the city council intends that such invalidity will not affect the effectiveness of the remaining provisions or applications and, to this end, the provisions of this Ordinance are severable.

SECTION 6: VALIDITY OF PREVIOUS CODE SECTIONS. If this the entire Ordinance or its application is deemed invalid by a court of competent jurisdiction, any repeal of the ESMC or other regulation by this Ordinance will be rendered void and cause such ESMC provision or other regulation to remain in full force and effect for all purposes.

SECTION 7: The City Clerk must certify as to the adoption of this ordinance and shall cause the summary thereof to be published within fifteen calendar (15) days of the adoption and post a certified copy of this ordinance, including the vote for and against the same, in the office of the City Clerk, in accordance with Government Code § 36993, for the City of El Segundo.

PASSED AND ADOPTED this 15th day of December, 2009.

Kelly McDowell, Mayor

ATTEST:

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) SS
CITY OF EL SEGUNDO)

I, Cindy Mortesen, City Clerk of the City of El Segundo, California, do hereby certify that the whole number of members of the City Council of said City is five; that the foregoing Ordinance No. 1437 was duly introduced by said City Council at a regular meeting held on the 1st day of December, 2009, and was duly passed and adopted by said City Council, approved and signed by the Mayor, and attested to by the City Clerk, all at a regular meeting of said Council held on the 15th day of December, 2009, and the same was so passed and adopted by the following vote:

AYES: **McDowell, Busch, Brann, Fisher, Jacobson**

NOES: **None**

ABSENT: **None**

ABSTAIN: **None**

Cathy Domann

Cindy Mortesen, City Clerk

APPROVED AS TO FORM:
Mark D. Hensley, City Attorney

By: ______________________
Karl H. Berger, Assistant City Attorney

H

WATER SHORTAGE CONTINGENCY PLAN

DRAFT

RESOLUTION NO.

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF EL SEGUNDO FINDING THE NECESSITY FOR AND ADOPTING A WATER SHORTAGE CONTINGENCY PLAN IN CONFORMANCE WITH THE GUIDELINES ESTABLISHED BY THE CALIFORNIA STATE DEPARTMENT OF WATER RESOURCES

BE IT RESOLVED by the City Council of the City of El Segundo as follows:

SECTION 1. Declaration of Policy. California Water Code Sections 375 et seq. permit public entities which supply water at retail to adopt and enforce a water conservation program to reduce the quantity of water used by the people therein for the purpose of conserving the water supplies of such public entity. The City Council of the City of El Segundo hereby establishes a draft comprehensive water conservation program pursuant to California Water Code Sode.375 et seq., based upon the need to conserve water supplies and to avoid or minimize the effects of any future shortage.

SECTION 2. Findings. The City Council of the City of El Segundo finds and determines that a water shortage could exist based upon the occurrence of one or more of the following conditions:

(A) A general water supply shortage due to increased demand or limited supplies.

(B) Distribution of storage facilities of Metropolitan Water District of Southern California or other agencies become inadequate.

(C) A major failure of the supply, storage and distribution facilities of the Metropolitan Water District of Southern California or of the City of El Segundo occurs.

The City Council of the City of El Segundo also finds and determines that the conditions prevailing in the State and in the Los Angeles County area require that the water resources available be put to maximum beneficial use to the extent to which they are capable, and that the waste or unreasonable use, or unreasonable method of use, of water be prevented and that the conservation of such water encouraged with a view to the maximum reasonable and beneficial use thereof in the interest of the people of the City of El Segundo and for the public welfare.

SECTION 3. Priority Uses of Water. In order to promote water conservation, the objective of the different levels of water management is to curtail low priority uses of water. Low priority uses of water are generally described as all uses other than drinking, cooking, bathing, sanitation, fire suppression, or for medicinal or health related uses requiring water, such as dialysis machines.

SECTION 4. Water Conservation Stages. Exhibit “A” of this Resolution details the water conservation stages.

SECTION 5. Mandatory Compliance. Exhibit “A” of this Resolution details the mandatory prohibitions and the stages in which they are enacted.

SECTION 6. Penalties. Exhibit “A” of this Resolution details the penalties and enforcement actions that the City of El Segundo may enforce during various stages of water shortage.

SECTION 7. Notification. The City of El Segundo shall notify all customers of the water shortage conservation level adopted by the City Council, and recommended and mandated practices adopted by the City.

SECTION 8. Appeal Process. The City Council shall, by Resolution, establish an appeal process that affords customers the opportunity to contest findings, correct errors, and alleviate unusual and extraordinary circumstances.

SECTION 9. Effective Date. This Resolution is enacted as an emergency measure and shall become effective on the date of adoption of the City Council.

SECTION 10. Severability. If any section, sub-section, clause or phrase in this Water Conservation Resolution or the application thereof to any person or circumstances is for any reason held invalid, the validity of the remainder of the Conservation Resolution or the application of such provisions to other persons or circumstances shall not be affected.

SECTION 11. California Environmental Quality Act. The provisions of this Resolution are exempt from the provisions of the California Environmental Quality Act as an action to mitigate emergency conditions and as a rate setting measure pursuant to Public Resources Code Sections 21080(b)(4) and 21080(b)(8), respectively; and in following with the exemption filed by the Metropolitan Water District of Southern California on January 8, 1991, as lead agency for the establishment of water delivery conservation programs for water delivered to the West Basin Municipal Water District.

PASSED AND ADOPTED this ___ day of ______________, 2006.

____
Kelly McDowell, Mayor

ATTEST:

____
Cindy Mortesen, City Clerk

APPROVED AS TO FORM:
Mark D. Hensley, City Attorney

By: ____________________________
Karl H. Berger, Assistant City Attorney

EXHIBIT “A”
TO
RESOLUTION NO.

DRAFT WATER SHORTAGE CONTINGENCY PLAN
(CHAPTER 8 OF THE 2005 URBAN WATER MANAGEMENT PLAN)

Chapter 8.0: Water Shortage Contingency Plan

8.1 Stages of Action

With population growth, energy shortages, earthquakes, and the threat of terrorism experienced by California; maintaining the gentle balance between water supply and demand is a complicated task that requires planning and forethought. In the event that a water shortage occurs, simple measures can be implemented to conserve the water supply at a public level. Below, stages are discussed during which various conservation measures will be imposed by the City of El Segundo, beginning with voluntary conservation and leading to various stages of mandatory compliance in the event that the water supply experiences shortages of up to a 50 percent reduction in the water supply. Implementation of the stages detailed below will occur on an emergency basis. This 2005 Urban Water Management Plan, specifically Chapter 8, will be enacted if the need arises and serves as the functioning Water Shortage Contingency Plan for the City of El Segundo. Appendix J details the Draft Resolution for adopting the water shortage contingency plan.

Table 8.1 – 1: Water Supply Shortage Stages and Conditions

Stage Number	Water Supply Conditions	Targeted Percent Shortage
Stage 1: **Voluntary Compliance – Water Watch**	Applies during periods when the possibility exists that the City of El Segundo will not be able to meet all of the demands of its customers.	0% to 15%
Stage 2: **Mandatory Compliance – Water Alert**	Applies during periods when the probability exists that the City of El Segundo will not be able to meet all of the water demands of its customers.	15% to 25%
Stage 3: **Mandatory Compliance – Water Warning**	Applies during periods when the City of El Segundo will not be able to meet all the water demands of its customers.	25% to 35%
Stage 4: **Mandatory Compliance – Water Emergency**	Applies when a major failure of any supply or distribution facility, whether temporary or permanent, occurs in the water distribution system of the State Water Project, Metropolitan Water District of Southern California, West Basin Municipal Water District, or El Segundo facilities.	35% to 50%

8.2 Minimum Supply for the Next Three Years

In order to prepare for and prevent water supply shortage, it is useful to estimate the future minimum supply. The minimum water supply available to the City of El Segundo for the next three years is estimated based upon the driest three year historic sequence and is compared to a normal three year estimate. El Segundo purchases water solely from West Basin Municipal Water District (WBMWD), and therefore, is directly dependent on the reliability of supplies from WBMWD.

WBMWD has chosen the sequence of FY 2001-2002, FY 2002-2003, and FY 2003-2004 as its multiple dry-year scenario, and hence, this sequence was used in the calculation of the three year minimum supply for the City of El Segundo. WBMWD's potable water supplier, Metropolitan, has indicated in its 2005 Regional Urban Water Management Plan that it plans to be able to provide 100% reliability for the supply demanded by its member agencies through 2025. This assurance of available supply from Metropolitan allows supply reliability projections to be based on projected demand.

Table 8.2 – 1: Three Year Estimated Minimum Water Supply (AFY)

Source	Normal Year			Multiple–Dry Year		
	2006	2007	2008	2006	2007	2008
WBMWD Potable Water	8,658	8,665	8,672	9,104	9,120	9,136
WBMWD Recycled Water	8,100	8,100	8,100	8,100	8,100	8,100

8.3 Catastrophic Supply Interruption Plan

As a California jurisdiction, the City of El Segundo could experience a catastrophic interruption in the water supply as a result of a regional power outage, earthquake, terrorism, or other event. A successful recovery plan is dependent upon an in depth understanding of the vulnerability of each source of supply, delivery system, and distribution system to potential catastrophes. Possible catastrophes are listed in Table 8.3 – 1: Preparation Actions for a Catastrophic Event and preparation actions being taken to reduce the severity of each event are discussed below.

Table 8.3 – 1: Preparation Actions for a Catastrophic Event

Possible Catastrophe	Check if Discussed
Regional Power Outage	√
Earthquake	√
Terrorism	√

8.3.1 Regional Power Outage

Currently, the City of El Segundo Water Division does not have generators. If a regional power outage were to occur, then the two electric pumps would become disabled. However, El Segundo has a natural gas pump, which has a greater pumping capacity than both electric pumps combined. The electric pumps operate at a maximum rate of 2000 gallons per minute (GPM), while the natural gas pump operates at 5000 GPM. If a major earthquake or other catastrophic incident caused a regional power outage and a natural gas line break, but the water distribution lines were still intact, the City of El Segundo would be able to provide water to its customers and its emergency interties (i.e. LADWP, City of Manhattan Beach, and California Water Service Company). Water Division operations personnel can change valve positions and directly operate the water system from Metropolitan Water District of Southern California's (Metropolitan) water pressure. The City of El Segundo is adequately prepared in the event of a regional power outage. Additionally, the City of El Segundo Water Division is planning on purchasing a generator during 2006-2007 to increase their preparedness for a regional power outage.

8.3.2 Earthquake

As previously discussed, if seismic activity caused power outage and natural gas line breaks, the City of El Segundo can adequately provide water to its customers. In regards to structural stability during an earthquake, the elevated tank was seismically retrofitted approximately 10 years ago. These retrofits included installing larger cross braces and more anchors on the footings of the tank. The 3 MG reservoir underwent a seismic evaluation in 2005 and was deemed stable, and the 6 MG reservoir has not undergone evaluation. In a worse case scenario and the reservoirs did rupture, then the valves could be aligned to service the community using Metropolitan water pressure.

8.3.3 Terrorism

Per the requirements of the Bioterrorism Act of 2002, El Segundo completed a Security Vulnerability Assessment (SVA) to identify and propose mitigation solutions to prevent deliberately induced events. The planning scenarios included contamination, bomb threats, security breaches, and vandalism, all of which were analyzed in detail and documented in a confidential report.

The SVA precipitated security enhancements recommendations that El Segundo is currently implementing. A new Supervisory Control and Data Acquisition (SCADA) Telemetry System is being installed in 2006 to provide better control and surveillance of the Water Division facilities, and some of the reservoirs have been equipped with hardened locks to inhibit adversaries. Furthermore, the City of El Segundo is still incorporating some of the following recommendations:

- Perimeter Fencing/Barrier Improvements,
- Application of Tamper-Resistant Equipment & Perimeter Locks,
- Lighting Improvements (Motion-Activated),
- Landscaping Improvements/Maintenance,

- Intrusion & Motion Detection Systems,
- Installation of Security Gratings & Screens,
- Signage Improvements,
- Administrative Improvements (Security Awareness Training, Employee Screening & Background Checks, Security Passwords for Computers & Alarms, Visitor Control, Mail Inspection), and
- Application of Proprietary Bolts.

8.4 Prohibitions and Consumption Reduction Methods

8.4.1 Water Shortage Planning

As part of the implementation of the regional Integrated Resources Planning (IRP), Metropolitan has developed a Water Surplus and Drought Management (WSDM) Plan for Southern California. This plan directs Metropolitan's resource operations to help attain the region's 100% reliability goal. The WSDM Plan was updated in 2004 to account for changes impacting supplies from the Colorado River and California's Bay–Delta. In the past, Metropolitan has developed drought management plans that simply addressed shortage actions and primarily focused on issues of short–term conservation and allocation of imported water. The WSDM Plan recognizes the interdependence of reliability. The overall goal of the WSDM Plan is to ensure that shortage allocation of Metropolitan's imported water supplies is not required.

The City of El Segundo has also prepared a list of water conservation measures that shall apply at each stage of local water shortage, which are summarized in Tables 8.4 – 1 and 8.4 – 2.

8.4.2 Mandatory Prohibitions

Exemption(s): The prohibited uses of water are not applicable to the use of water necessary for public health and safety, or for essential governmental services, such as police, fire, and other similar emergency services.

Table 8.4. – 1: Mandatory Prohibitions

Prohibition	Stage When Prohibition Becomes Mandatory
1. Using Potable Water for Street Washing	Stage 2
2. Serving Water at Restaurants	Stage 2
3. Operating Ornamental Fountains	Stage 2
4. Issuing New Meters	Stage 3
5. Washing Vehicles	Stage 3

Table 8.4. – 1: Mandatory Prohibitions	
Prohibition	**Stage When Prohibition Becomes Mandatory**
6. Watering Lawns and Landscape	Stage 2, 3, 4
7. Using Water For Agriculture and Nurseries	Stage 2, 3, 4
8. Filling Artificial Water Sources	Stage 4
9. Using Air Conditioning	Stage 4

1. **Using Potable Water for Street Washing**

   Water shall not be used to wash down sidewalks, driveways, parking areas, tennis courts, patios, or other paved areas, except to alleviate immediate fire or sanitation hazards.

2. **Serving Water at Restaurants**

   No operator or owner of a restaurant, hotel, cafe, cafeteria, or other public place where food is sold, served, or offered for sale, shall serve or allow to be served drinking water to any customer except when specifically requested.

3. **Operating Ornamental Fountains**

   No person shall use water to clean, fill, or maintain levels in decorative fountains, ponds, lakes, or other similar aesthetic structures unless such water is part of a recycling system or from a storm drain system.

4. **Issuing New Meters**

   New construction meters or permits for unmetered service will not be issued. Construction water shall not be used for earth work or road construction purposes.

5. **Washing Vehicles**

   No person shall wash any motor vehicle, trailer, boat, or other type of mobile equipment, except with a hand-held bucket or a hose equipped with a positive shutoff nozzle for quick rinses.

   Stage 3 Exemption(s): Washing is permitted at any time on the immediate premises of a commercial car wash. The use of water by all types of commercial car washes not using partially reclaimed or recycled water shall be reduced in volume by 20%. Further, such washing are exempted from these regulations where health, safety, and welfare of the public is contingent upon frequent vehicle cleaning, such as garbage trucks and vehicles used to transport food and perishables.

   Stage 4 Exemption(s): Washing is permitted at any time on the immediate premises of a commercial car wash. The use of water by all types of commercial car washes not using partially reclaimed or recycled water shall be reduced in volume by 50%. Further, such washing are exempted from these regulations where health, safety, and welfare of the public is contingent upon frequent vehicle cleaning, such as garbage trucks and vehicles used to transport food and perishables.

6. **Watering Lawns and Landscape**

These restrictions do not apply to commercial nurseries, golf courses, and other water-dependent industries.

Stage 2: No person shall water any lawn, landscape, or other turf area between the following hours: 7:00 AM – 6:00 PM during PDT and 7:00 AM to 3:00 PM during PST.

Stage 3: No person shall water any residential lawn, landscaping, and other turf areas at any time except by hand-carried bucket.

Stage 4: Residential landscaping shall be restricted to water only permanent trees and shrubs with a hand carried bucket or drip irrigation system once during a seven day period during the months of June, July, August, and September, and prohibited during the hours of 7:00 AM to 6:00 PM. Residential landscape irrigation shall be restricted to watering only permanent trees and shrubs with a hand carried bucket or drip irrigation system once during a fourteen day period during the months of October, November, December, January, February, March, April, and May, and prohibited during the hours of 7:00 AM to 3:00 PM.

7. **Using Water for Agriculture and Nurseries**

Exemption(s): Watering of plant materials classified to be rare, exceptionally valuable, or essential to the well being of rare animals is exempt.

Stage 2: No operator or owner of a commercial nursery, golf course, or other water-dependent industry shall water any lawn, landscaping, or other turf area between the hours of 6:00 AM and 6:00 PM. There shall be no restriction on watering with reclaimed water.

Stage 3: Irrigation of commercial nurseries, golf courses, or other water-dependent industries shall be restricted to no more than twice during a seven day period. The irrigation shall be prohibited during the hours of 6:00 AM to 6:00 PM. There shall be no restriction on watering with reclaimed water.

Stage 4: Irrigation of commercial nurseries, golf courses, or other water-dependent industries shall be restricted to once during a seven day period and prohibited during the hours of 6:00 AM to 6:00 PM. There shall be no restriction on watering with reclaimed water.

8. **Filling Artificial Water Sources**

Filling or refilling swimming pools, spas, ponds, and artificial lakes is prohibited.

9. **Using Air Conditioning**

No water shall be used for air conditioning purposes.

8.4.3 Consumption Reduction Methods

Table 8.4-2: Consumption Reduction Methods

Consumption Reduction Methods	Stage When Method Takes Effect	Projected Reduction (%)
1. Emergency Water Conservation Allocation	Stage 2, 3, 4	Dependent on Water Shortage Stage*
2. Conservation Pricing	Stage 2	
3. Prohibitions	Stage 2	

*Section 8.1 details the percent reduction for each Water Shortage Stage.

1. **Emergency Water Conservation Allocation**

During advanced stages of water shortage, the City of El Segundo places mandatory allocation constraints requiring a percent consumption reduction. Individual allotments are based on a "basic use" as administratively determined by the City Manager. Exceptions are made for residential customers with 5/8”, 3/4", or 1” meters which are not required to use less than a set daily equivalent per two month billing period. Reductions for each phase are outlined below:

Stage 2: 20 percent reduction from the set allocation **OR** no more than the daily equivalent of 24 hundred cubic feet (hcf) per two month billing period*,

Stage 3: 30 percent reduction from the set allocation **OR** no more than the daily equivalent of 21 hcf per two month billing period*,

Stage 4: 50 percent reduction from the set allocation **OR** no more than the daily equivalent of 15 hcf per two month billing period*.

** This exception applies only to residential customers with 5/8", 3/4" or 1" meters.*

2. **Conservation Pricing**

During rationing situations, customers who exceed their Emergency Water Conservation Allocation may have a surcharge for excess usage imposed upon their regular water bill as described in Section 8.5.1.

3. **Prohibitions**

The prohibitions detailed in Section 8.4.2 are implemented on a mandatory basis as described in that section.

8.5 Penalties

For violations pertaining to the emergency water conservation allocation described in Section 8.4.3, a surcharge upon the customer's regular water bill shall be imposed in an amount equivalent to the unit rate charged to El Segundo by the West Basin Municipal Water District for excess water purchased.

The proposed penalties for violation of any of the provisions outlined in Section 8.4.2 will be reviewed and enacted during a water shortage if required by the Metropolitan Water District of Southern California or the California Department of Water Resources. These proposed penalties are summarized in Table 8.5-1 and detailed below.

Table 8.5 – 1: Penalties and Charges for Violations of Prohibitions

Penalties	Stage When Penalty Takes Effect
Written Notice	1st Failure to Comply
Flow Restricting Device Installed	2nd Failure to Comply
Discontinued Water Services	3rd Failure to Comply
Charges	**Stage When Penalty Takes Effect**
$35.00 Charge	2nd Failure to Comply
$70.00 Charge	3rd Failure to Comply

8.5.1 Prior to Enforcement

Prior to enforcement, any person who is suspected of violating this Water Shortage Contingency Plan shall be given a written notice, with a description of the violation. Such person shall have 24 hours to correct the violation.

8.5.2 First Failure to Comply

For the first failure to comply, the City of El Segundo will issue the customer a written notice that a first violation of any water shortage stage has occurred.

8.5.3 Second Failure to Comply

For the second failure to comply, the City of El Segundo will install, for a period no less than 48 hours and until the customer satisfies to the City of El Segundo that failure to comply will not continue, a flow-restricting device in the customer's water service line. The charge for installing and removing the flow-restricting device will be $35.00 and will be paid by the customer prior to removal.

8.5.4 Third or Subsequent Failure to Comply

For the third or subsequent failure to comply; the City of El Segundo will discontinue water service for a period of no less than 24 hours and until the customer satisfies to El Segundo that failure to comply will not continue. The customer will pay $70.00 for restoration of water service.

8.6 Revenue Impact Analysis

In the event that a decrease in water supply occurs for an extended period of time, El Segundo could face a potential loss requiring El Segundo to draw from any reserves and also re–examine the revenue stream in order to balance the budget. El Segundo could experience increased costs (expenditures) from West Basin Municipal Water District due to the water supply shortages, but decreased customer usage (revenues) due to the conservation methods in effect. It is thus important to consider possible measures to overcome revenue and expenditure impacts.

8.6.1 Measures to Overcome Revenue Impacts

Table 8.6 – 1: Proposed Measures to Overcome Revenue Impacts

Names of Measures	Check if Discussed
1. Rate Adjustment	√

1. Rate Adjustment

Should the City of El Segundo experience a significant decrease in water supplies for an extended period of time, the City Council would consider a water rate increase or water fee surcharge to cover any revenue shortfall due to water shortages or conservation measures.

8.6.2 Measures to Overcome Expenditure Impacts

Table 8.6-2: Proposed Measures to Overcome Expenditure Impacts

Names of Measures	Check if Discussed
1. Tiered Water Rate Structure	√

1. Tiered Water Rate Structure

El Segundo continually maintains a tiered water rate structure for both potable and recycled water use. By this system, consumers rates increase with increased water consumption. This measure increases revenues in times of increased demand, which may be used to investigate alternative sources of supply.

8.7 Reduction Monitoring Procedure

As part of the mandatory conservation phase implementation, El Segundo will monitor the projected supply and demand for water by its customers on a daily basis. The City Manager shall determine the extent of the conservation required through the implementation and/or termination of particular conservation stages in order for El Segundo to prudently plan for and supply water to its customers. Thereafter, the City Manager may order that the appropriate stage of water conservation be implemented or terminated in accordance with the applicable provision of this Water Shortage Contingency Plan.

Table 8.7-1: Water Use Monitoring Mechanisms

Mechanisms for Determining Actual Reductions	Type of Data Expected
1. Water Supply Report	Monthly Water Production/Use Trends, Gallons Produced Per Day
2. Water Usage Records	Identification of individual customers with exceptionally high water usage.

1. **Water Supply Report**

   Under normal water supply conditions, potable water production figures are recorded daily. Totals are reported monthly to the Water Distribution Supervisor and Finance Department and incorporated into the water supply report. This report is forwarded to the West Basin Municipal Water District, and with such data, it is possible to develop trends for monthly water production and use.

2. **Water Usage Records**

   El Segundo maintains water use records on each individual customer account. Exceptionally high usage is identified at the time the meter is read. These accounts are investigated for potential water loss or abuse.

SYSTEMS LOSS CALCULATIONS WORKSHEET

AWWA Free Water Audit Software v5.0

This spreadsheet-based water audit tool is designed to help quantify and track water losses associated with water distribution systems and identify areas for improved efficiency and cost recovery. It provides a "top-down" summary water audit format, and is not meant to take the place of a full-scale, comprehensive water audit format.

Auditors are strongly encouraged to refer to the most current edition of AWWA M36 Manual for Water Audits
for detailed guidance on the water auditing process and targetting loss reduction levels

The spreadsheet contains several separate worksheets. Sheets can be accessed using the tabs towards the bottom of the screen, or by clicking the buttons below.

Please begin by providing the following information

Name of Contact Person: George Long
Email Address: George.Long@RMPCorp.com
Telephone | Ext.: 9492820123 |
Name of City / Utility: City of El Segundo
City/Town/Municipality: El Segundo
State / Province: California (CA)
Country: USA
Year: 2015 Financial Year
Start Date: 07/2014 Enter MM/YYYY numeric format
End Date: 06/2015 Enter MM/YYYY numeric format
Audit Preparation Date: 3/7/2016
Volume Reporting Units: Acre-feet
PWSID / Other ID:

The following guidance will help you complete the Audit

All audit data are entered on the ***Reporting Worksheet***

☐	Value can be entered by user
🟨	Value calculated based on input data
🟪	These cells contain recommended default values

Use of Option (Radio) Buttons: Pcnt: 0.25% ● ○ Value:

Select the default percentage by choosing the option button on the left

To enter a value, choose this button and enter a value in the cell to the right

The following worksheets are available by clicking the buttons below or selecting the tabs along the bottom of the page

Instructions
The current sheet. Enter contact information and basic audit details (year, units etc)

Reporting Worksheet
Enter the required data on this worksheet to calculate the water balance and data grading

Comments
Enter comments to explain how values were calculated or to document data sources

Performance Indicators
Review the performance indicators to evaluate the results of the audit

Water Balance
The values entered in the Reporting Worksheet are used to populate the Water Balance

Dashboard
A graphical summary of the water balance and Non-Revenue Water components

Grading Matrix
Presents the possible grading options for each input component of the audit

Service Connection Diagram
Diagrams depicting possible customer service connection line configurations

Definitions
Use this sheet to understand the terms used in the audit process

Loss Control Planning
Use this sheet to interpret the results of the audit validity score and performance indicators

Example Audits
Reporting Worksheet and Performance Indicators examples are shown for two validated audits

Acknowledgements
Acknowledgements for the AWWA Free Water Audit Software v5.0

If you have questions or comments regarding the software please contact us via email at: wlc@awwa.org

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
+ Click to add a comment

Water Audit Report for: City of El Segundo
Reporting Year: 2015 7/2014 - 6/2015

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

WATER SUPPLIED

<----------- Enter grading in column 'E' and 'J' ---------->

									Pcnt:		Value:	
Volume from own sources:	+	?	8	0.000	acre-ft/yr	+	?			● ○		acre-ft/yr
Water imported:	+	?	8	8,127.000	acre-ft/yr	+	?			● ○		acre-ft/yr
Water exported:	+	?	8	0.000	acre-ft/yr	+	?			● ○		acre-ft/yr
WATER SUPPLIED:				**8,127.000**	acre-ft/yr							

Enter negative % or value for under-registration
Enter positive % or value for over-registration

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

						Pcnt:		Value:	
Billed metered:	+	?	8	7,961.000	acre-ft/yr				
Billed unmetered:	+	?			acre-ft/yr				
Unbilled metered:	+	?			acre-ft/yr				
Unbilled unmetered:	+	?		101.588	acre-ft/yr	1.25%	● ○		acre-ft/yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

AUTHORIZED CONSUMPTION:	?		**8,062.588**	acre-ft/yr

Use buttons to select percentage of water supplied
OR
value

WATER LOSSES (Water Supplied - Authorized Consumption)

64.413 acre-ft/yr

Apparent Losses

						Pcnt:		Value:	
Unauthorized consumption:	+	?		20.318	acre-ft/yr	0.25%	● ○		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	+	?		0.000	acre-ft/yr	🟥	● ○		acre-ft/yr
Systematic data handling errors:	+	?		19.903	acre-ft/yr	0.25%	● ○		acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses:	?	**40.220**	acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses:	?	**24.193**	acre-ft/yr
WATER LOSSES:		**64.413**	acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER:	?	**166.000**	acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	+	?			miles
Number of active AND inactive service connections:	+	?			
Service connection density:		?			conn./mile main
Are customer meters typically located at the curbstop or property line?					
Average length of customer service line:	+	?			ft
Average operating pressure:	+	?			psi

(length of service line, beyond the property boundary, that is the responsibility of the utility)

COST DATA

Total annual cost of operating water system:	+	?			$/Year
Customer retail unit cost (applied to Apparent Losses):	+	?			$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	+	?			$/acre-ft

☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

Add a grading value for 8 parameter(s) to enable an audit score to be calculated

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Customer metering inaccuracies
2: Total annual cost of operating water system
3: Customer retail unit cost (applied to Apparent Losses)

AWWA Free Water Audit Software:
System Attributes and Performance Indicators

WAS v5.0

Water Audit Report for: City of El Segundo
Reporting Year: 2015 7/2014 - 6/2015

********** DATA GRADING MUST BE COMPLTED ON THE REPORTING WORKSHEET BEFORE PERFORMANCE INDICATORS CAN BE DISPLAYED **********

System Attributes:

Apparent Losses: acre-ft/yr
+ Real Losses: acre-ft/yr
= Water Losses: acre-ft/yr

? Unavoidable Annual Real Losses (UARL): acre-ft/yr

Annual cost of Apparent Losses:
Annual cost of Real Losses: Valued at Variable Production Cost

Return to Reporting Worksheet to change this assumpiton

Performance Indicators:

Financial:
Non-revenue water as percent by volume of Water Supplied:
Non-revenue water as percent by cost of operating system: Real Losses valued at Variable Production Cost

Operational Efficiency:
Apparent Losses per service connection per day: gallons/connection/day
Real Losses per service connection per day: gallons/connection/day
Real Losses per length of main per day*: gallons/mile/day
Real Losses per service connection per day per psi pressure: gallons/connection/day/psi

From Above, Real Losses = Current Annual Real Losses (CARL): acre-feet/year

? Infrastructure Leakage Index (ILI) [CARL/UARL]:

* This performance indicator applies for systems with a low service connection density of less than 32 service connections/mile of pipeline

AWWA Free Water Audit Software: Water Balance

WAS v5.0

Water Audit Report for: **City of El Segundo**

Reporting Year: **2015** **7/2014 - 6/2015**

Data Validity Score: **N/A*** *** Confirm Units and Data Grading are Complete**

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<tr><td>Leakage and Overflows at Utility's Storage Tanks
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<tr><td>Leakage on Service Connections
<i>Not broken down</i></td></tr>
</table>

AWWA Free Water Audit Software:
Dashboard

WAS v5.0

The graphic below is a visual representation of the Water Balance with bar heights propotional to the volume of the audit components

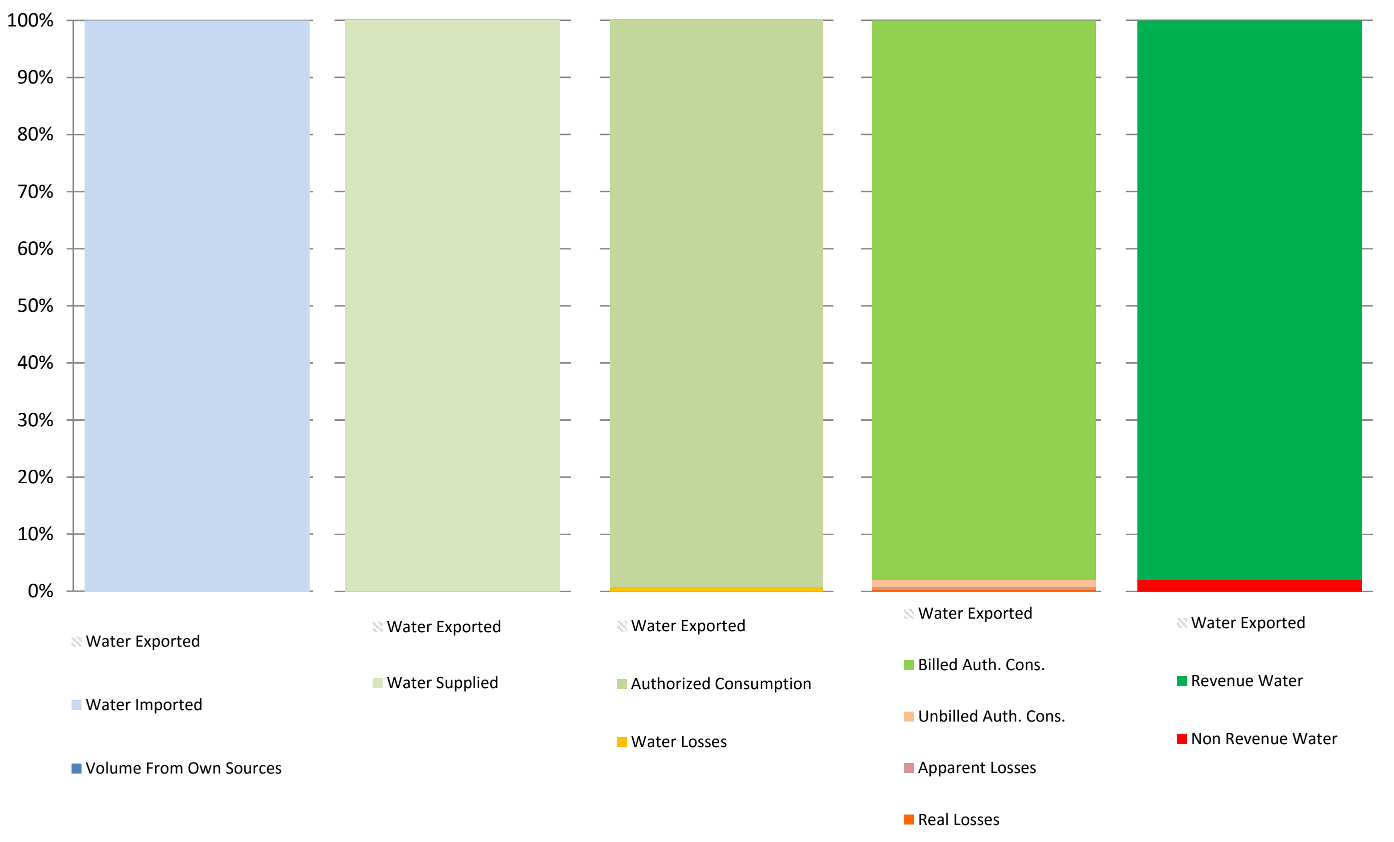
Water Audit Report for: **City of El Segundo**

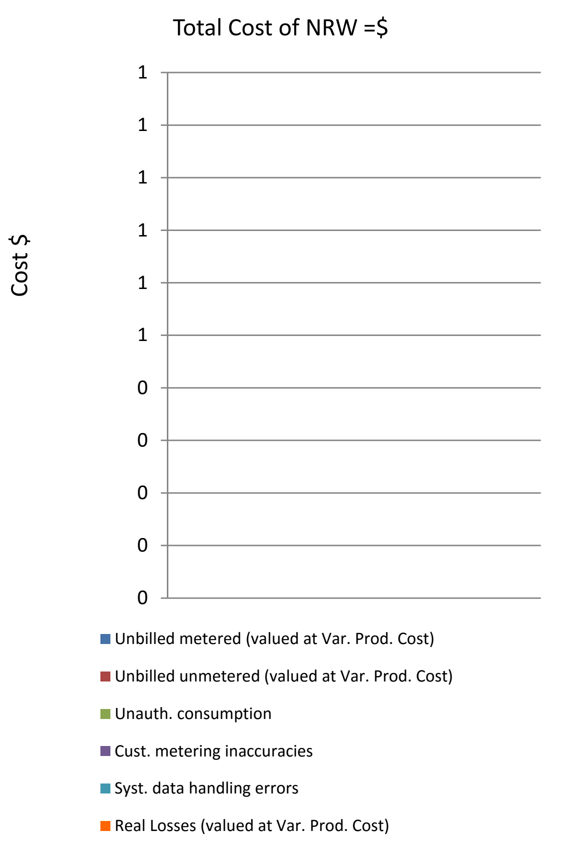
Reporting Year: **2015** **7/2014 - 6/2015**

Data Validity Score: **N/A*** *** Confirm Units and Data Grading are Complete**

○ Show me the VOLUME of Non-Revenue Water

● Show me the COST of Non-Revenue Water





J

METHODOLOGIES FOR CALCULATING BASELINE & COMPLIANCE URBAN PER CAPITA WATER USE

Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use

(For the Consistent Implementation of the Water Conservation Act of 2009)

October 1, 2010

California Department of Water Resources
Division of Statewide Integrated Water Management
Water Use and Efficiency Branch

Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use

October 1, 2010

California Department of Water Resources

Division of Statewide Integrated Water Management

Water Use and Efficiency Branch

State of California
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The Natural Resources Agency
Lester Snow, Secretary

Department of Water Resources
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Introduction

In February 2008, Governor Arnold Schwarzenegger introduced a seven-part comprehensive plan for improving the Sacramento-San Joaquin Delta. A key component of his plan was a goal to achieve a 20 percent reduction in per capita water use statewide by the year 2020. The governor's inclusion of water conservation in the Delta plan emphasizes the importance of water conservation in reducing demand on the Delta and in reducing demand on the overall California water supply. In response to Schwarzenegger's call for statewide per capita savings, the Department of Water Resources (DWR) and the State Water Resources Control Board convened the 20x2020 Agency Team on Water Conservation. DWR released a draft 20x2020 Water Conservation Plan in April 2009 and the final 20x2020 Water Conservation Plan in February 2010. The water conservation plan developed estimates of statewide and regional baseline per capita water use and outlined recommendations to the governor on how a statewide per capita water use reduction plan could be implemented.

In November 2009, SBx7-7, The Water Conservation Act of 2009, was signed into law as part of a comprehensive water legislation package. The Water Conservation Act addresses both urban and agricultural water conservation. The urban provisions reflect the approach taken in the 20x2020 Water Conservation Plan. The legislation sets a goal of achieving a 20 percent statewide reduction in urban per capita water use and directs urban retail water suppliers to set 2020 urban water use targets.

The Water Conservation Act of 2009 directs DWR to develop technical methodologies and criteria to ensure the consistent implementation of the Act and to provide guidance to urban retail water suppliers in developing baseline and compliance water use. These technical methodologies were developed through a public process with stakeholder input. DWR has held two public listening sessions, five public stakeholder meetings, and two public workshops to receive comment on the technical methodologies. One of the methodologies, the Criteria for Compliance -Year Adjustment will be released in 2011. This methodology is not needed by urban water suppliers to develop 2010 urban water management plans, and additional time is needed to develop the weather normalization model, which will be a major component of the methodology.

Background documents, stakeholder meeting summaries and public comments related to the development of these methodologies are available at the Water Conservation Act of 2009 website: http://www.water.ca.gov/wateruseefficiency/sb7/

Or contact:

SBx7-7 Urban Water Conservation Program Manager
Water Use and Efficiency Branch
Department of Water Resources, 1416 Ninth Street, Sacramento CA 95814

Overview of Methodologies, Water Use Targets, and Reporting

The Water Conservation Act of 2009 was incorporated into Division 6 of the California Water Code, commencing with Section 10608 of Part 2.55. All quotations of the Water Code in this report are from sections added by this legislation, unless otherwise noted.

The methodologies, water use targets, and reporting apply to urban retail water suppliers that meet a threshold of number of end users or annual volume of potable water supplied. Section 10698.12 (p) defines the water suppliers affected:

> *"Urban retail water supplier" means a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes.*

This overview summarizes the process that urban retail water suppliers must follow and the options they have for complying with the legislation.

Methodologies

The legislation specifically calls for developing seven methodologies and a set of criteria for adjusting daily per capita water use at the time compliance is required (the 2015 and 2020 compliance years) under Section 10608.20(h):

> *(1) The department, through a public process and in consultation with the California Urban Water Conservation Council, shall develop technical methodologies and criteria for the consistent implementation of this part, including, but not limited to, both of the following:*
>
> *(A) Methodologies for calculating base daily per capita water use, baseline commercial, industrial, and institutional water use, compliance daily per capita water use, gross water use, service area population, indoor residential water use, and landscaped area water use.*
>
> *(B) Criteria for adjustments pursuant to subdivisions (d) and (e) of Section 10608.24.*

Sections 10608.20 and 10608.28 of the Water Code allow water suppliers the choice of complying individually or regionally by mutual agreement with other water suppliers or regional agencies. DWR has also developed a methodology for regional compliance.

The following methodologies are included in this report:

- Methodology 1: Gross Water Use
- Methodology 2: Service Area Population
- Methodology 3: Base Daily Per Capita Water Use

- Methodology 4: Compliance Daily Per Capita Water Use
- Methodology 5: Indoor Residential Use
- Methodology 6: Landscaped Area Water Use
- Methodology 7: Baseline Commercial, Industrial, and Institutional Water Use
- Methodology 8: Criteria for Adjustments to Compliance Daily Per Capita Water Use
- Methodology 9: Regional Compliance

The methodologies provide specific guidance to water suppliers on how to calculate baseline, target, and compliance-year water use. Each methodology defines how its calculations are to be used, with direct reference to the applicable section of the Water Code. Each methodology describes the calculations, data needed, and, where applicable, optional steps and alternative approaches that water suppliers may use depending on their specific circumstances.

The methodologies for indoor residential water use; landscaped area water use; and baseline commercial, industrial, and institutional water use (Methodologies 5, 6, and 7) apply only to urban retail water suppliers who use Method 2 (see Water Use Targets below) to set water use targets.

Baseline Water Use

Water suppliers must define a 10- or 15-year base (or baseline) period for water use that will be used to develop their target levels of per capita water use. Water suppliers must also calculate water use for a 5-year baseline period, and use that value to determine a minimum required reduction in water use by 2020. The longer baseline period applies to a water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water. Methodology 3: Base Daily Per Capita Water Use describes the calculations.

Water Use Targets

An urban retail water supplier, as defined above, must set a 2020 water use target and a 2015 interim target using one of four methods. Three of these are defined in Section 10608.20(a)(1), with the fourth developed by DWR by the end of 2010. The 2020 water use target will be calculated using one of the following four methods:

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

- Method 2: Per capita daily water use estimated using the sum of performance standards applied to indoor residential use; landscaped area water use; and commercial, industrial, and institutional uses

- Method 3: Ninety-five percent of the applicable state hydrologic region target as stated in the State's April 30, 2009, draft 20x2020 Water Conservation Plan

- Method 4: An approach developed by DWR and reported to the Legislature by December 2010 (a description of this target method will be included as Appendix C)

The target may need to be adjusted further to achieve a minimum reduction in water use regardless of the target method (this is explained in Methodology 3). The Water Code directs that water suppliers must compare their actual water use in 2020 with their calculated targets to assess compliance. In addition, water suppliers will report interim compliance in 2015 as compared to an interim target (generally halfway between the baseline water use and the 2020 target level). The years 2015 and 2020 are referred to in the methodologies as compliance years. All baseline, target, and compliance-year water use estimates must be calculated and reported in gallons per capita per day (GPCD).

Water suppliers have some flexibility in setting and revising water use targets:

- A water supplier may set its water use target and comply individually, or as part of a regional alliance (see Methodology 9: Regional Compliance).
- A water supplier may revise its water use target in its 2015 or 2020 urban water management plan or in an amended plan.
- A water supplier may change the method it uses to set its water use target and report it in a 2010 amended plan or in its 2015 urban water management plan. Urban water suppliers are not permitted to change target methods after they have submitted their 2015 UWMP.

Data Reporting

DWR will collect data pertaining to urban water use targets through three documents: (1) through the individual supplier urban water management plans; (2) through the regional urban water management plans; and (3) through regional alliance reports.

Water suppliers that comply individually must report the following data in their urban water management plans (applicable urban water management plan dates are included in parentheses).

- Baseline Gross Water Use and Service Area Population (2010, 2015, 2020)
- Individual 2020 Urban Water Use Target (2010, 2015, 2020) and Interim 2015 Urban Water Use Target (2010)
- Compliance Year Gross Water Use (2015 and 2020) and Service Area Population (2010, 2015, 2020)
- Adjustments to Gross Water Use in the compliance year (2015, 2020)
- Water suppliers who choose Target Method 2 also must provide Landscaped Area Water Use and Baseline CII Water Use data (2010, 2015, 2020).
- Water Suppliers who choose Target Method 4 must provide the components of calculation as required by Target Method 4. Appendix C describes Target Method 4 and the regional compliance reporting that applies to that method (2010, 2015, 2020).

Water suppliers that comply regionally must fulfill additional reporting requirements. These are described in greater detail in Methodology 9: Regional Compliance.

Consequences if Water Supplier Does Not Meet Water Use Targets

Each urban retail water supplier, as defined above, must comply by establishing 2015 and 2020 water use targets, demonstrating that its water use is in compliance with its targets, and reporting water use baselines, targets, compliance year water use, and supporting data in its urban water management plan. Section 10608.56 (a) states that a water supplier not in compliance will not be eligible for water grants or loans that may be administered by DWR or other state agencies:

> *On and after July 1, 2016, an urban retail water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.*

Two exceptions to this are allowed. Section 10608.56 (c) states that a water supplier shall be eligible for a water loan or grant if it "has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for achieving the per capita reductions."

Section 10608.56 (e) states that a water supplier can also be eligible for a water loan or grant if it "has submitted to the department for approval documentation demonstrating that its entire service area qualifies as a disadvantaged community."

Methodology 1: Gross Water Use

Definition of Gross Water Use

Section 10608.12(g) of the Water Code defines "Gross Water Use" as:

> *the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:*
>
> *(1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier*
>
> *(2) The net volume of water that the urban retail water supplier places into long-term storage*
>
> *(3) The volume of water the urban retail water supplier conveys for use by another urban water supplier*
>
> *(4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24*

Calculation of Gross Water Use

Gross Water Use is a measure of water supplied to the distribution system over 12 months and adjusted for changes in distribution system storage and deliveries to other water suppliers that pass through the distribution system. Recycled water deliveries are to be excluded from the calculation of Gross Water Use. Water delivered through the distribution system for agricultural use may be deducted from the calculation of Gross Water Use. Under certain conditions, industrial process water use also may be deducted from Gross Water Use.

The methodology for calculating Gross Water Use broadly follows American Water Works Association (AWWA) Manual M36 guidance for calculating Distribution System Input Volume.[1] Calculating Gross Water Use entails 12 basic steps, two of which are optional.[2]

Step 1: Define the 12-month Calculation Period

Gross Water Use shall be calculated over a continuous 12-month period. This period can be based on the calendar year or the utility's fiscal year.[3] The same 12-month period must be used in calculations of Gross Water Use for determining Base Daily Per Capita Water Use and Compliance Daily Per Capita Water Use.

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[1] American Water Works Association, Manual of Water Supply Practices – M36: Water Audits and Loss Control Programs, 3rd Edition, 2009. M36 defines *Distribution System Input Volume* as the volume of water entering the distribution system to provide service to customers. It is equal to the water volume derived from the water utility's own source waters, plus water imported or purchased, plus or minus the net change in water storage (if applicable and significant).

[2] AWWA Manual M36 contains several forms and worksheets that retail urban water suppliers can use to compile and organize data required to calculate Gross Water Use.

[3] As stipulated in paragraph (1) of subdivision (a) of Section 10608.20 of SBx7-7.

Step 2: Delineate Distribution System Boundary

Water supply systems can be broadly subdivided between the transmission systems that convey large amounts of water to local storage reservoirs or treatment plants, and the distribution systems that supply water to residential, commercial, industrial, and public uses such as fire safety. Water distribution systems generally comprise large networks of pipes with complex branched and loop topologies with multiple flow paths to many delivery points.[4] In some systems, some retail customers receive water for municipal and industrial (M&I) uses directly from transmission canals and pipes, in which case the retail water supplier may treat the sections of the transmission canals and pipes delivering water to the retail M&I customers as part of its distribution system. However, transmission canals and pipelines not used for delivering water directly to retail customers should not be included as part of the distribution system.

Wherever possible, distribution system boundary limits should be defined by points of metering or measurement[5] of the water supply. Typical measurement locations for distribution include exit points for treatment plants, treated water reservoirs, wells feeding directly into the distribution system, and imported water entering directly into the distribution system. A schematic of a typical urban retail water supply system is shown in Figure 1; actual distribution systems may vary greatly in configuration. Therefore, each urban retail water supplier must define and delineate its distribution system for purposes of calculating Gross Water Use. The rules for defining and delineating the distribution system boundary must be applied consistently in the base period and compliance years.[6]

Step 3: Compile Water Volume from Own Sources

The water supplier's own sources of supply entering the distribution system shall be identified and tallied. For systems that provide only treated water, this may consist mostly or entirely of water entering the distribution system from treatment plants (as in Figure 1). It may also include water from wells or other sources controlled by the water supplier that directly supply the distribution system (as in Figure 1).

Recycled water, as defined in subdivision (m) of Section 10608.12, *directly* entering the distribution system shall be excluded from the tally of own sources. Step 8 addresses how to account for recycled water *indirectly* entering the distribution system through potable reuse.

Measurement records for each source shall be compiled into annual volumes. AWWA's M36 manual or other appropriate references should be consulted in situations where water sources are unmetered or the water meters have not been routinely calibrated. Volumes for each source shall be reviewed and corrected for known errors that may exist in the raw

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[4] http://censam.mit.edu/news/posters/whittle/1.pdf

[5] Measurements of unmetered agricultural and raw water deliveries must, at a minimum, meet an accuracy standard of +/- 6% by volume, as defined in the U.S. Bureau of Reclamation, Mid-Pacific Region's "2008 Conservation and Efficiency Criteria". Metered deliveries of M&I water must meet the measurement accuracy and calibration standards described in American Water Works Association Manual M6.

[6] For guidance on situations in which the distribution system boundary changed during the base period, see Methodology 3: Base Daily Per Capita Water Use. For situations in which the distribution system boundary changed during the compliance period, see Methodology 4: Compliance Daily Per Capita Water Use.

measurement data. Uncorrected metered volumes shall be adjusted based on the registration accuracy of the meter, as follows:[7]

$$\text{metered volume correction} = \frac{\text{uncorrected metered volume}}{\text{registration accuracy expressed as a decimal}} - \text{uncorrected meter volume}$$

Step 4: Compile Imported Water Volume

Outside sources of finished water imported directly into the distribution system shall be identified and tabulated, excluding the following:

- Recycled water, as defined in subdivision (m) of Section 10608.12, imported from another water supplier
- Imported raw water passing through the urban retail water supplier's treatment plants, if that water has already been counted under Step 3 (as in Figure 1)

The raw measurement data shall be corrected for known errors in the same manner as for own source water.[8]

Step 5: Compile Exported Water Volume

Any water volumes sent through the distribution system to another water utility or jurisdiction shall be identified and tabulated. Recycled water, as defined in subdivision (m) of Section 10608.12, exiting the distribution system shall be excluded from the tabulation.[9] Bulk water exports that do not pass through the distribution system also shall not be counted. The raw metering data shall be corrected for known errors in the same manner as for own source and imported water.

Step 6: Calculate Net Change in Distribution System Storage

If distribution system storage is greater at the end of the year than at the beginning, it indicates that water has entered the distribution system but has not been delivered to customers. This water would have been counted in Steps 3 and 4, but because it has not been delivered to customers, it must be deducted from the calculation of Gross Water Use. Conversely, a decrease in end-of-year distribution system storage indicates that water has been drawn from storage to meet customer demands. This water would not have been counted in Steps 1 and 2, and therefore must be added to the calculation of Gross Water Use. Note that these calculations apply only to storage in the distribution system. Do not include changes in storage outside the distribution system. If the change in distribution system storage is expected to be insignificant, or if data needed to calculate the change in distribution system storage are not available, the water supplier may forgo this step.

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[7] AWWA Manual M36 should be consulted if additional guidance on correcting raw meter data for meter registration inaccuracy is needed. Meters with errors exceeding AWWA standards should be recalibrated, repaired, or replaced.

[8] Generally, bulk water sale meters are routinely monitored for accuracy because they provide the basis for payment between the wholesaler and retailer.

[9] It is necessary to subtract recycled water exiting the system only if it was included in the tabulations of water entering the distribution system performed in Steps 3 and 4. However, the easiest way to handle recycled water directly entering the distribution system in the calculation of Gross Water Use is to exclude it entirely from each calculation step.

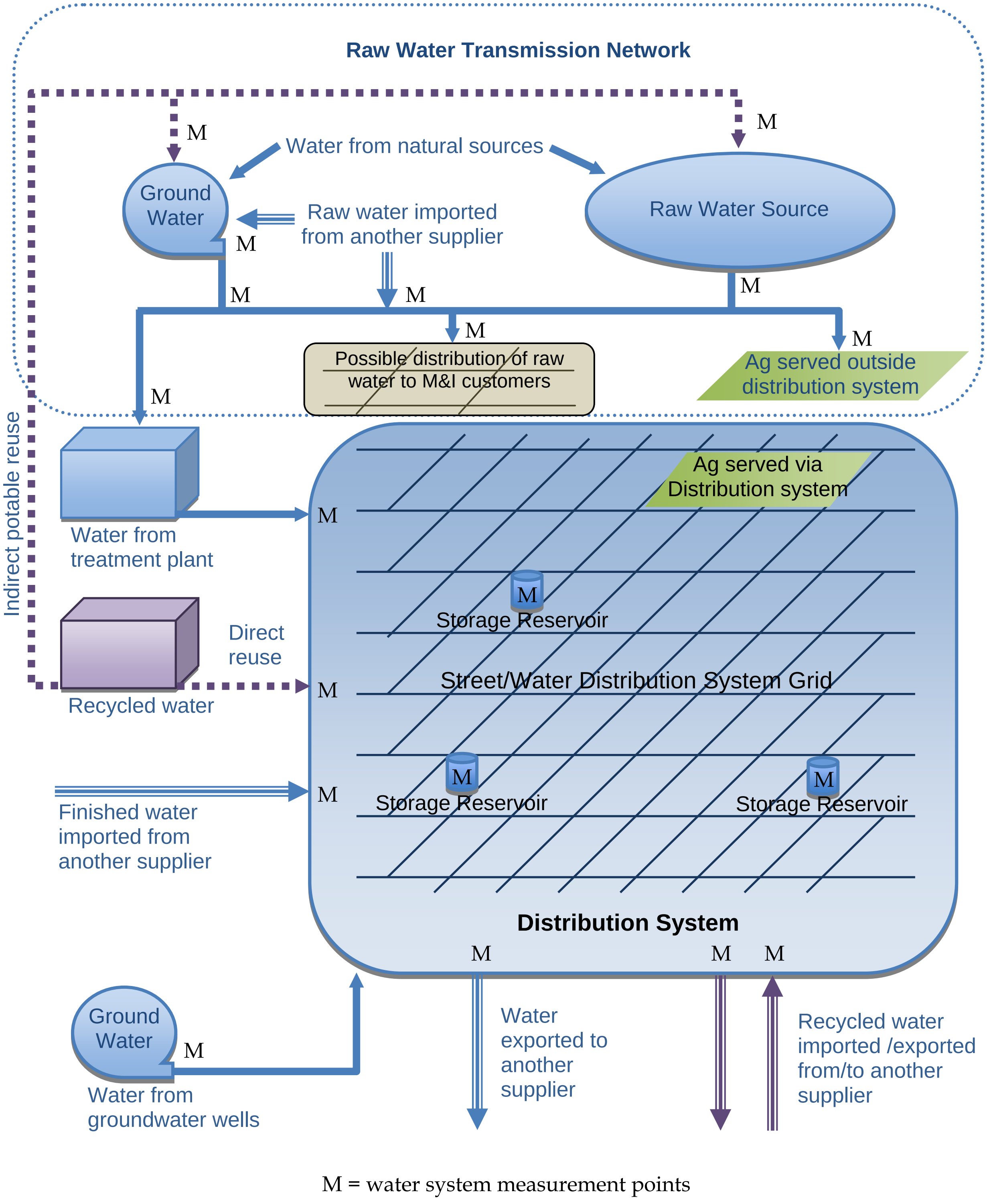

FIGURE 1
URBAN RETAIL WATER SUPPLIER SYSTEM SCHEMATIC[10]

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[10] Figure 1 provides a general depiction of all of the elements that may affect the calculation of Gross Water Use. Not all of these elements may be present in a particular water system, nor is it expected that Figure 1 will accurately characterize a particular system configuration.

Step 7: Calculate Gross Water Use before Indirect Recycled Water Use Deductions

Gross Water Use before Indirect Recycled Water Use Deductions equals the volume of water from own sources entering the distribution system determined in Step 3, plus the volume of water from imported water sources entering the distribution system determined in Step 4, less the volume of water delivered via the distribution system to other utilities determined in Step 5, less the net change in distribution system storage determined in Step 6.[11] Table 1 provides an example calculation.

Step 8: Deduct Recycled Water Used for Indirect Potable Reuse from Gross Water Use

This step is necessary only if the urban retail water supplier uses recycled water (as defined in Subdivision (m) of Section 10608.12) to supplement raw surface or groundwater for indirect potable reuse. The Step 8 deduction requires the urban retail water supplier to estimate the amount of recycled water indirectly entering the distribution system through a surface or groundwater source (as in Figure 1).[12] This calculation requires three steps: (1) estimate the amount of recycled water used to supplement a surface reservoir source of supply, (2) estimate the amount of recycled water in extracted groundwater sources of supply, and (3) adjust these volumes for losses during transmission and treatment before the water enters the distribution system.

1. **Estimate recycled water used for surface reservoir augmentation.** The allowable deduction depends on the recycled water blend percentage in the surface reservoir water entering the potable water treatment plant. For example, if the raw surface water source is 95 percent fresh water and 5 percent recycled water, no more than 5 percent of the volume from this water source can be deducted from Gross Water Use calculated in Step 7. If the blend percentage of a surface water source is unknown, it shall be estimated based on the measured or estimated volumes of recycled water, local runoff, and imported water that entered the reservoir for the three years before the year for which Gross Water Use is being calculated. For example, if Gross Water Use is being calculated for 2005, the blend percentage is estimated by dividing the volume of recycled water that entered the reservoir by the total volume of water that entered the reservoir from 2002 through 2004.

2. **Estimate recycled water used for groundwater recharge.** Three approaches are allowed to estimate the amount of recycled water extracted from groundwater and introduced into a distribution system. Because year-to-year variations can occur in the amount of recycled water applied in a groundwater recharge operation, long-term running averages are required.

    a. **Monitoring data at extraction wells.** If monitoring data are available to enable determination of the percent of extracted water at each extraction well that originated as recycled water (for example, using geochemical analysis), then such data can be used to estimate the amount of recycled water entering a distribution system. To account for year-to-year variations, the credit for recycled water is a five-year running monthly average percentage for each well for the preceding 60 months.

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[11] If the net change is negative, Gross Water Use will increase. If it is positive, Gross Water Use will decrease.

[12] Recycled water used for indirect potable use should only be subtracted at the time it enters the potable distribution system. It cannot be subtracted when placed into storage and again when extracted for potable use.

For recharge projects in operation less than 60 months, a period of 60 months can be created using a combination of actual monitoring data since initiation of recharge operations and projected data. The projected data can be based on an acceptable groundwater model as described in paragraph b below or a projected average of extraction using the procedure described in paragraph c below.

b. Groundwater model for extraction wells. If a groundwater model is available that has the capability of tracking the movement of recycled water from recharge operations to extraction wells and estimating the percent of extracted groundwater that originated as recycled water at each well operated by the water supplier based on actual historic data of recycled water applied at groundwater recharge operations, then such data can be used to determine the amount of recycled water entering a distribution system. The groundwater model must be calibrated and approved as part of an adjudication or other regulatory process, such as the groundwater permitting process by the California Department of Public Health or a California Regional Water Quality Control Board. To account for year-to-year variations, the credit for recycled water is a five-year running monthly average percentage at each well for the preceding 60 months. For recharge projects in operation less than 60 months, the monthly running average may be derived from the model using all months of actual recycled water applied in a recharge operation and projected recycled water amounts planned to be applied for a future period to reach a combined total of 60 months of operation.

c. Recharge data less in-basin losses. Where actual extraction well monitoring data or estimated data obtained from an accepted groundwater model, as described in paragraph b above, are unavailable, an estimate can be made of extracted recycled water based on amounts of recycled water applied in recharge operations adjusted for an in-basin loss factor. The allowable deduction depends on the product of three factors:

- The average annual volume of recycled water recharged into the groundwater basin for the purpose of indirect potable reuse over the 5 years before the year for which Gross Water Use is being calculated. For recharge projects in operation less than 60 months, data from all months of actual recharge operations may be combined with projected volumes of recycled water recharge to reach a combined total of 60 months of operation to calculate the average annual volume of recycled water recharged.
- A loss factor to account for water losses during recharge and extraction. If a loss factor has been developed as part of a groundwater management plan, a basin adjudication process, or some similar regulatory process, the water supplier shall use that loss factor and provide reference to the appropriate documentation. If a loss factor has not been developed as part of a local regulatory process, the water supplier shall use a default loss factor of 10 percent.13 The default loss factor of 10

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[13] The default value of 10 percent is based on the loss factors applied to groundwater storage in the Arvin-Edison and Semitropic Water Storage Districts. It also is consistent with the range of 0 to 15 percent loss factors applied to California water storage projects identified in the Groundwater Banking Programs Survey-Results and Summary Report prepared for the Sacramento Groundwater Authority by Kennedy/Jenks Consultants (2008). The projects they surveyed primarily used modeling and observation to determine the specific loss factor for each project.

percent is not applicable to groundwater recharge operations intended as seawater intrusion barriers. For seawater intrusion barriers, the loss factor will be determined on a case-by-case basis.

- The volume of water pumped from the basin by the urban retail water supplier expressed as a percentage of the total volume of water pumped by all water users extracting water from the basin in the year for which Gross Water Use is being calculated.

For example, if the average annual recharge of recycled water for the five years before the year for which Gross Water Use is being calculated is 500 acre-feet (AF), the recharge loss factor is 10 percent, and the urban retail water supplier accounted for 25 percent of the volume of water pumped from the basin in the year for which Gross Water Use is being calculated, then no more than 113AF =(500 x (1.0-0.10) x 0.25) from this supply source can be deducted from Gross Water Use calculated in Step 7.

3. **Adjust for losses.** Only deduct the volume of recycled water used for indirect potable reuse that enters the distribution system from Gross Water Use calculated in Step 7. Loss factors for transmission and treatment based on recent system audit data (or other reliable sources for estimating transmission and treatment losses) shall be applied to the estimated volumes of recycled water. For example, if the volume of recycled water before transmission and treatment is estimated to be 1,000 AF, and combined losses from transmission and treatment are estimated to be 3 percent, only 970 AF shall be deducted from Gross Water Use calculated in Step 7.

Table 2 shows an example calculation of the volume of recycled water used for indirect potable reuse based on approach 2.c above.

Step 9: Calculate Gross Water Use after Deducting Indirect Recycled Water Use

This equals the volume of water determined in Step 7 less the volume of water determined in Step 8. Table 1 shows an example calculation of Gross Water Use after indirect recycled water use deductions.

Step 10 (Optional): Deduct from Gross Water Use the Volume of Water Delivered for Agricultural Use

This step is necessary only if the urban retail water supplier has chosen to exclude from the calculation of Gross Water Use water delivered for agriculture per Section 10608.12 (g) (4). Consideration of agricultural water use must be the same for calculations of Gross Water Use for determining Base Daily Per Capita Water Use and Compliance Daily Per Capita Water Use.

Identify and tabulate the volume of water delivered through the distribution system for agricultural water uses. Do not include deliveries that bypass the distribution system (see Figure 1 for examples of agricultural deliveries inside and outside the distribution system). Delivery volumes shall be based on account records and meter data for connections in the distribution system used to supply water for the commercial production of agricultural crops or livestock.[14]

Step 11 (Optional): Deduct Volume of Water Delivered for Process Water Use

This step is necessary only if the urban retail water supplier has elected to exclude process water from the calculation of Gross Water Use *and* the supplier is eligible to do so. An urban retail water supplier is eligible to exclude process water from the calculation of Gross Water Use only if its industrial water use comprises a substantial percentage of total water use. [NOTE: See Appendix D for guidance on whether to include or exclude process water.]

Step 12: Calculate Gross Water Use after Optional Deductions

This equals the volume of water determined in Step 9 less the volume of water determined in Steps 10 and 11. Table 1 provides an example calculation of Gross Water Use after optional deductions.

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[14] The standard used to identify distribution system connections supplying agricultural water uses is based on subdivision (b) of Section 535 of the California Water Code. Commercial agricultural production is defined by the U.S. Department of Agriculture and the Census Bureau as any place from which $1,000 or more of agricultural products (crops and livestock) were sold or normally would have been sold during the year. For the purposes of calculating Gross Water Use, retail nursery water use is not considered to be an agricultural water use.

TABLE 1
EXAMPLE URBAN RETAIL WATER SUPPLIER GROSS WATER USE CALCULATION

Utility Name:		**12-month period:**		**1-Jan to 31-Dec**			**Volume Units:**		**Million Gallons**		
Item	**Calculation**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**
	Volume from Own Sources (raw data)	3,480.8									
	Meter error adjustment (+/-)	136.9									
1	*Subtotal: Corrected Volume from Own Sources*	3,617.7									
	Volume from Imported Sources (raw data)	1,005.0									
	Meter error adjustment (+/-)	39.5									
2	*Subtotal: Corrected Volume from Imported Sources*	1,044.5									
3	***Total Volume Into Dist. System = Item 1 + Item 2***	***4,662.2***									
	Volume Exported to Other Utilities (raw data)	432.0									
	Meter error adjustment (+/-)	17.3									
4	*Subtotal: Corrected Volume Exported to Other Utilities*	449.3									
5	Change in Dist. System Storage (+/-)	-8.6									
6	***Gross Water Use Before Indirect Recycled Water Use Deductions = Item 3 - Item 4 - Item 5***	***4,221.5***									
7	Indirect Recycled Water Use Deduction	304.3									
8	***Gross Water Use After Indirect Recycled Water Use Deductions = Item 6 - Item 7***	***3,917.2***									
9	*Water Delivered for Ag. Use (optional deduction)*	0.0									
10	*Process Water Use (optional deduction)*	278.8									
11	**Gross Water Use After Optional Deductions = Item 8 - Item 9 - Item 10**	**3,638.4**									

TABLE 2

EXAMPLE CALCULATION OF ANNUAL DEDUCTABLE VOLUME OF INDIRECT RECYCLED WATER ENTERING DISTRIBUTION SYSTEM

Surface Reservoir Augmentation			**Volume Discharged from Reservoir for Distribution System Delivery (MG)**	**Recycled Water Blend**	**Recycled Water Delivered to Treatment Plant (MG)**	**Transmission/ Treatment Loss**	**Transmission/ Treatment Losses (MG)**	**Volume Entering Distribution System (MG)**
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
					(4) x (5)		(6) x (7)	(6) – (8)
Source 1			1,000	5%	50	3%	1.5	48.5
Source 2			500	10%	50	3%	1.5	48.5
						Subtotal Reservoir Augmentation:		*97.0*

Groundwater Recharge	**5-Year Annual Average Recharge (MG)**	**Recharge Recovery Factor**	**Recycled Water Pumped from Basin (MG)**	**Utility Pumping as % of Basin Total**	**Recycled Water Pumped by Utility (MG)**	**Transmission/ Treatment Loss**	**Transmission/ Treatment Losses (MG)**	**Volume Entering Distribution System (MG)**
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			(2) x (3)		(4) x (5)		(6) x (7)	(6) – (8)
Basin 1	500	90%	450	25%	113	3%	3.4	109.1
Basin 2	750	90%	675	15%	101	3%	3.0	98.2
						Subtotal Groundwater Recharge:		*207.3*
			Deductable Volume of Indirect Recycled Water Entering Distribution System:					**304.3**

Note:

MG = million gallons

Methodology 2: Service Area Population

Definition of the Service Area Population

Section 10608.20(f) states:

> *When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.*

The legislation directs DWR to develop consistent methodologies and criteria for determining Service Area Population.

To obtain an accurate estimate of GPCD, water suppliers must estimate population of the areas that they actually serve, which may or may not coincide with either their jurisdictional boundaries or with the boundaries of cities. Customers may be in the distribution area with a wholly private supply during the baseline and compliance years, and new areas may be annexed into a water supplier's distribution system over time. The area used for calculating Service Area Population shall be the same as the distribution system area used in Methodology 1, Gross Water Use.

Figure 2 illustrates the many different situations that may arise, with the background grid indicating the census blocks that overlap with the water supplier's service area boundary. Examples include the following:

- The actual distribution area may cover only a portion of the jurisdictional boundary.
- Large water users that depend wholly or partially on a private groundwater supply (e.g., college campus, a military installation, a correctional facility) may exist in the distribution area. If such a user is wholly dependent on private supply, its residents should be excluded. If the user is partially dependent (for example, it uses a municipal source for indoor use and private groundwater wells for irrigation only), its residents served by the municipal source should be included. Estimation of compliance GPCD for customers that switch their irrigation to a municipal source between the baseline and compliance years is addressed in Methodology 4: Compliance Daily Per Capita Water Use.
- New customers outside the present distribution area may connect to the water supplier's distribution system in the future for various reasons.
- The water supplier's distribution system can geographically expand over time as a result of economic and population growth.

Although a water supplier may consult any or all federal, State, and local data sources to estimate population, these estimates must account for the above-mentioned complexities.

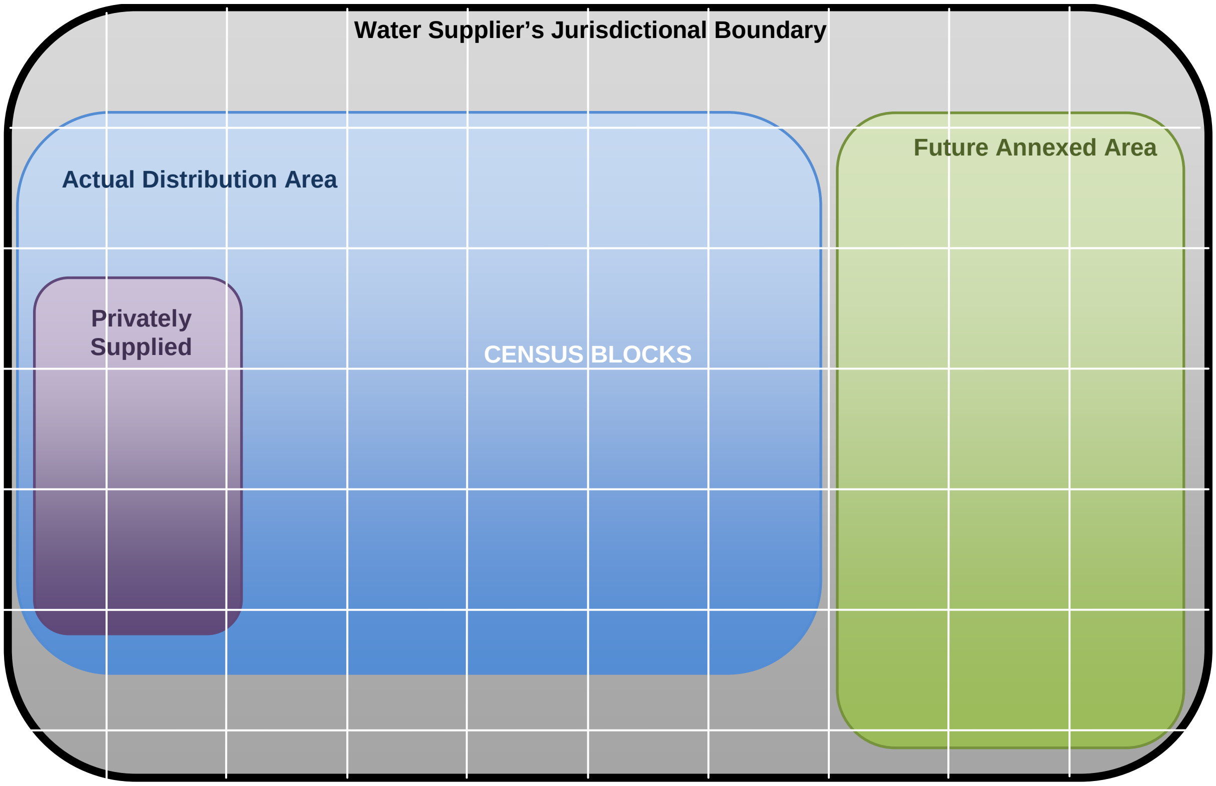

FIGURE 2
DEFINING AREA FOR POPULATION CALCULATION

Estimating the Service Area Population

Data published by the California Department of Finance (DOF) or the U.S. Census Bureau must serve as the foundational building block for population estimates. In some instances, data published by these two sources may be directly applicable. In other instances, additional refinements may be necessary. For example, to account for distribution areas that do not match city boundaries, customers with private sources of supply, or other unique local circumstances, water suppliers may have to supplement the above sources of data with additional local data sources such as county assessor data, building permits data, and traffic analysis zone data. These refinements are acceptable as long as they are consistently applied over time, and as long as they build upon population data resources of the DOF or the U.S. Census Bureau. Suppliers in any category listed below may use the persons per-connection or person per housing unit population calculation method described in Appendix A.

Retail water suppliers will generally fall into one of the following three categories:

- Category 1: Water suppliers whose *actual distribution area* overlaps substantially (≥95%) with city boundaries (may be a single city or a group of cities) during baseline and compliance years
- Category 2: Water suppliers not falling in Category 1 but having an electronic geographic information system (GIS) map of their distribution area

- Category 3: Water suppliers not falling in Category 1 and lacking an electronic GIS map of their distribution area.

Category 1 Water Suppliers

These water suppliers are encouraged to use population data published by the DOF's demography unit. However, population data may also be available through a water wholesaler, a local government agency, or an association of local governments. A list of associations of local governments is available through the California Association of Councils of Government (CALCOG: www.calcog.org). Many of these associations serve as census-data repositories and also have GIS capabilities.

Category 1 water suppliers may use population estimates from any of these federal, state, or local agencies, as long as they clearly cite their data source, use the same source for both the baseline and compliance years, and correct these estimates for privately supplied large customers that may exist in their actual distribution area (for development of these corrections, see Appendix A).

Category 2 Water Suppliers

These water suppliers have two options:

- Water suppliers that are members of an association of local governments (or a water wholesaler) that develop population estimates for its members using GIS maps of actual distribution areas and population data from the DOF or Census Bureau should use these data for the baseline and compliance years. These suppliers are not required to use the per-connection or per-housing unit methodology described in Appendix A. The water suppliers should coordinate with the local government association or wholesaler to complete the task of identifying and removing large institutions with wholly private systems in their distribution area.
- Water suppliers without such membership must develop population estimates using either a per-connection or per-housing unit methodology described in Appendix A or another equivalent method that uses data either from the DOF or the U.S. Census Bureau as its basis.

Category 3 Water Suppliers

These water suppliers have the same two options as Category 2 water suppliers. The only difference is that to access the U.S. Census Bureau's population data resources, they first must identify which census blocks fall in their distribution area. This exercise can be performed manually (see Appendix A), or the distribution area map boundary can be digitized. Category 3 water suppliers may be able to access these digitization capabilities and census-based population estimation capabilities through their local association of governments. Alternatively, they can develop population estimates using either the per-connection or per-housing unit methodology described in Appendix A or another equivalent method that uses data from either the DOF or the U.S. Census Bureau as its basis.

Determining Adequacy of Current Population Estimate Methodology

Figure 3 provides a flow chart to help water suppliers determine whether their existing population estimation methodology is adequate or must be refined. If refinement is needed, it should be coordinated with the water wholesaler or the local association of governments that currently provides population estimates. Water suppliers that currently lack access to reliable population estimates that reflect characteristics of their actual distribution areas can use the per-connection methodology described in Appendix A.

Adjusting Population Estimates

Population increases in existing developed areas or high-density infill redevelopments are estimated annually by DOF for incorporated cities and unincorporated portions of counties. These and other sources of local data may be used to estimate population for the non-census years. For water suppliers using the methodology described in Appendix A, population changes largely will be captured through the persons-per-connection ratios applied to changes in counts of active connections over time.

Water suppliers may revise population estimates for baseline years between 2000 and 2010 when 2010 census information becomes available. DWR will examine discrepancy between the actual 2010 population estimate and the DOF's projections for 2010. If significant discrepancies are discovered, DWR may require some or all suppliers to update their baseline population estimates.

Service area boundaries may also contract or expand during the baseline period. The latter could occur because of annexation of previously developed areas that may have been dependent upon private groundwater wells in the past but have subsequently become part of an urban retail water supplier's system. The following list provides guidance under various annexation scenarios. Additional adjustments may be required to population estimates for events that occur between the baseline and compliance years. These issues are discussed in Methodology 4: Compliance Daily Per Capita Use.

- If a portion of the distribution area is removed during one of the baseline years, water suppliers must compute their baseline after eliminating this removed portion from all their baseline years.
- If an area was annexed before the first baseline year, or the annexation involves merger with another urban retail water supplier, no data issues arise. In the latter case, population and connections data would be available for each water supplier separately. If not, appropriate estimates should be developed and documented.
- If the area was annexed before 2000, population estimates should be developed for the annexed area using the census block and person-per-connection method outlined in Appendix A, or an equivalent method.
- If the area was annexed after 2000, the water supplier will know the connection count only in the year of the annexation, not in 2000 and corresponding to the population estimate. Water suppliers may apply person-per-connection ratios developed for their pre-annexation distribution area to estimate population in the annexed area, or use other defensible techniques. For example, they could obtain county assessor data to back-cast what connection counts would have been in the annexed area in 2000 to permit scaling of census population estimates for the annexed areas to the post-annexation years. These can be further improved after 2012 once data from the 2010 census become available.

Water suppliers in other unique situations, such as those experiencing a significant change in their seasonal workforce or seasonal resident population between the baseline and compliance years, may adjust their population estimates using other techniques. The water supplier must provide documentation that the technique is based on or consistent with DOF or U.S. Census Bureau population data.

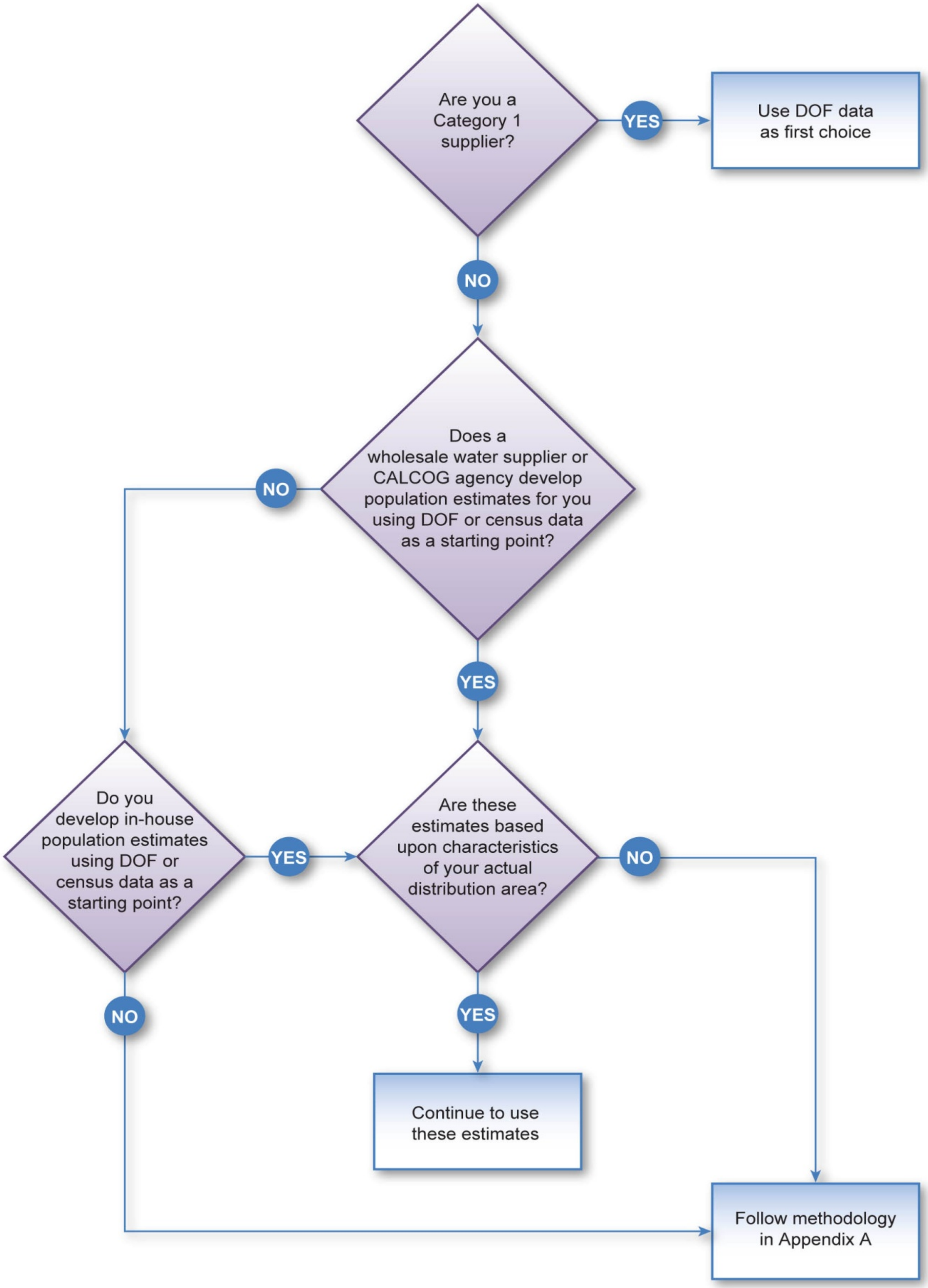

FIGURE 3
SUGGESTED PROCESS FOR DETERMINING ADEQUACY OF SERVICE AREA POPULATION ESTIMATE METHODOLOGY

Methodology 3: Base Daily Per Capita Water Use

Definition of Base Daily Per Capita Water Use

Base Daily Per Capita Water Use is defined as average gross water use, expressed in GPCD, for a continuous, multiyear base period. The Water Code specifies two different base periods for calculating Base Daily Per Capita Water Use under Section 10608.20 and Section 10608.22:

- The first base period is a 10- to 15-year continuous period, and is used to calculate baseline per capita water use per Section 10608.20.
- The second base period is a continuous five-year period, and is used to determine whether the 2020 per capita water use target meets the legislation's minimum water use reduction requirement per Section 10608.22.

Unless the urban retail water supplier's five year Base Daily Per Capita Water Use per Section 10608.12 (b) (3) is 100 GPCD or less, Base Daily Per Capita Water Use must be calculated for both baseline periods.

Calculation of Base Daily Per Capita Water Use

Calculating Base Daily Per Capita Water Use entails four steps:

1. Estimate Service Area Population for each year in the base period using Methodology 2.
2. Calculate Gross Water Use for each year in the base period using Methodology 1. Express Gross Water Use in gallons per day (gpd).[15]
3. Calculate daily per capita water use for each year in the base period. Divide Gross Water Use (determined in Step 2) by Service Area Population (determined in Step 1).
4. Calculate Base Daily Per Capita Water Use. Calculate average per capita water use by summing the values calculated in Step 3 and dividing by the number of years in the base period. The result is Base Daily Per Capita Water Use for the selected base period.

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[15] If Gross Water Use is expressed in million gallons per year, multiply by 1,000,000 and then divide the result by 365. If Gross Water Use is expressed in acre-feet, multiply by 325,851 and then divide the result by 365.

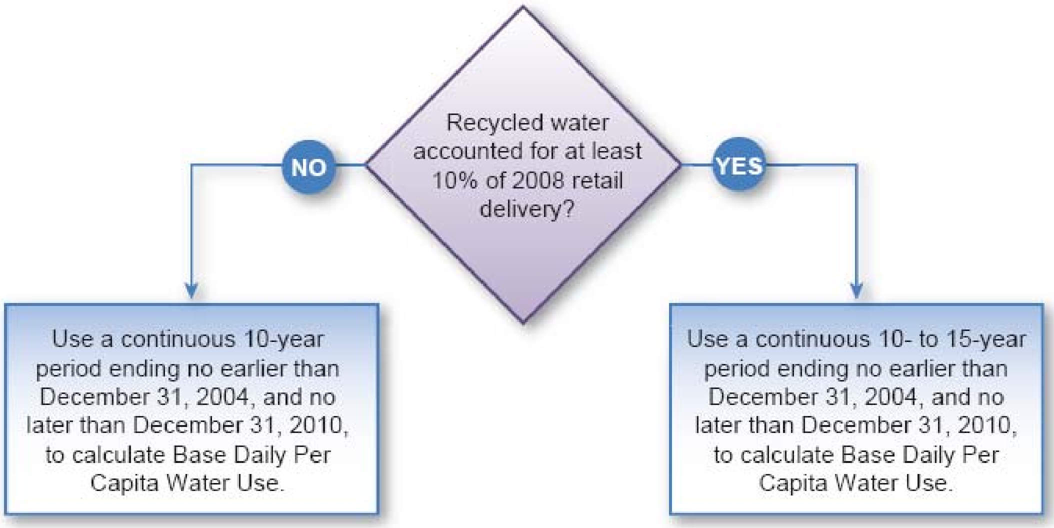

FIGURE 4
10 TO 15 YEAR BASE DAILY PER CAPITA WATER USE CALCULATIONS

Calculating Base Daily Per Capita Water Use per Section 10608.20

Calculate Base Daily Per Capita Water Use using one of the following base periods:

- If recycled water made up less than 10 percent of 2008 retail water delivery, use a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.
- If recycled water made up 10 percent or more of 2008 retail water delivery, use a continuous 10- to 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

Figure 4 illustrates the procedure. If Gross Water Use and/or population are not available for the full base period, the water supplier shall calculate base daily per capita water use for the maximum number of years for which data are available. When selecting between base periods, the water supplier shall select the base period for which the most data are available. For example, if gross water use and/or population data are not available before 1997, the water supplier shall select a base period starting in 1997.

Distribution Area Expansion Caused by Mergers

If two or more water suppliers merged wholly, or one water supplier acquired a portion of another's service area, during a year that falls in the baseline period of the merged entity, they should derive their baseline GPCD as if they were a single entity for the entire baseline period to stay consistent with the targets and compliance GPCDs that would represent the merged entity.

Distribution Area Contraction

If during the baseline period a previously served portion of the distribution system is removed from a water supplier's service area, the baseline GPCD shall be corrected to reflect only that portion of the service area that remained consistently supplied during the baseline and compliance years.

Distribution Area Expansion by Annexation of Already Developed Areas[16]

For areas annexed during the baseline years, water suppliers can select one of two choices:

- Include these areas for baseline GPCD estimation and test compliance for the combined entity.
- Track baseline and compliance GPCDs for the annexed areas separately.

Determining the Minimum Water Use Reduction Requirement per Section 10608.22

The following calculation is required only if the five-year baseline per capita water use per Section 10608.12 (b) (3) is greater than 100 gpcd. The calculation is used to determine whether the water supplier's 2015 and 2020 per capita water use targets meet the legislation's minimum water use reduction requirement per Section 10608.22. The calculation entails three steps:

1. Calculate Base Daily Per Capita Water Use using a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.[17]
2. Multiply the result from Step 1 by 0.95. The 2020 per capita water use target cannot exceed this value (unless the water supplier's five year baseline per capita water use is 100 gpcd or less). If the 2020 target is greater than this value, reduce the target to this value.
3. Set the 2015 target to the mid-point between the 10- or 15-year baseline per capita water use and the 2020 target determined in Step 2.

As an example, suppose a water supplier has a 10-year baseline per capita water use (per Section 10608.20) of 170 GPCD, and a 5-year baseline per capita water use (per Section 10608.22) of 168 GPCD.

- The maximum allowable GPCD target in 2020 (per Section 10608.22) is 0.95 x 168 GPCD = 160 GPCD.
- The 2020 target under Method 1 is 0.8 x 170 GPCD = 136 GPCD.

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[16] Annexation here refers to already developed and inhabited areas that may have relied upon groundwater until this point in time, or on other sources of water for which data are not available, and that were not previously connected to a municipal source. This is not to be confused with annexation of previously undeveloped land. No adjustment is required for the latter type of annexation, whose impact on GPCD is naturally accounted for by the estimation of base period Gross Water Use and Service Area Population.

[17] If 5 years of continuous data are not available, use the maximum number of years for which data are available.

Because the Method 1 target is less than 160 GPCD, no further adjustment to the 2020 target is required if Method 1 is used.

Suppose the water supplier's 2020 target under Method 3 is 167 GPCD. Because this is greater than 160 GPCD, the target would need to be reduced to 160 GPCD if Method 3 is used.

Similarly, if a target calculated using Method 2 or 4 exceeded 160 GPCD, it would need to be reduced to 160 GPCD in order to satisfy the legislation's minimum water use reduction requirement. Figure 5 shows how the two baseline per capita water use amounts are used to determine whether the 2020 target meets the legislation's minimum water use reduction requirement.

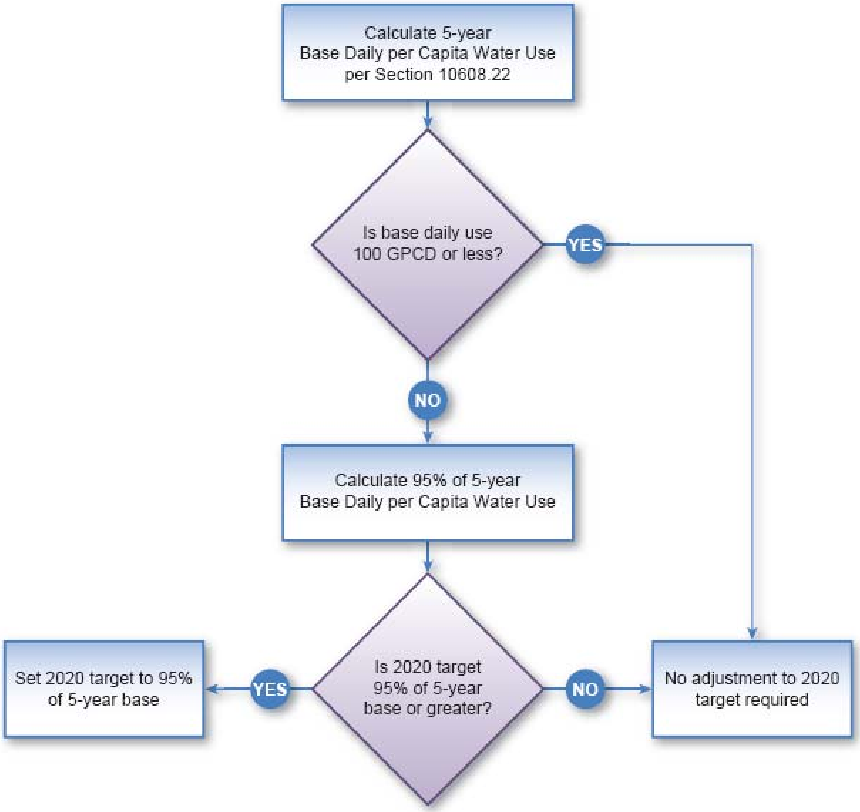

FIGURE 5
DETERMINATION OF MAXIMUM ALLOWABLE 2020 GPCD TARGET

Tables 4 and 5 may be used to organize the information needed to calculate Base Daily Per Capita Water Use under Sections 10608.20 and 10608.22.

TABLE 3
BASE DAILY PER CAPITA WATER USE CALCULATION FOR SECTION 10608.22

Utility Name: ____

12-month Period: ______________________ to ______________________

(1) Base Years#	(2) Service Area Population	(3) Gross Water Use (gal. per day)	(4) Daily Per Capita Water Use (3) ÷ (2)
Year 1			
Year 2			
Year 3			
Year 4			
Year 5			
		Total of Column (4):	
		Divide Total by 5:	

#Most recent year in base period must end no earlier than December 31, 2007, and no later than December 31, 2010.

TABLE 4
BASE DAILY PER CAPITA WATER USE CALCULATION FOR SECTION 10608.20

Utility Name: ____

12-month Period: ______________________ to ______________________

(1) Base Years*	(2) Service Area Population	(3) Gross Water Use (gal. per day)	(4) Daily Per Capita Water Use (3) ÷ (2)
Year 1			
Year 2			
Year 3			
Year 4			
Year 5			
Year 6			
Year 7			
Year 8			
Year 9			
Year 10			
Year 11			
Year 12			
Year 13			
Year 14			
Year 15			
		Total of Column (4):	
		Divide Total by Number of Base Years:	

* Enter the actual year of the data in this column. The most recent year in base period must end no earlier than December 31, 2004, and no later than December 31, 2010. The base period cannot exceed 10 years unless at least 10 percent of 2008 retail deliveries were met with recycled water.

Revisions to Base Daily Per Capita Water Use or Targets

A water supplier may revise its calculated Base Daily Per Capita Water Use after submitting its 2010 urban water management plan if better information becomes available. The revisions may be included in the water supplier's 2015 and subsequent plans or may be submitted as an amended plan, provided it follows the process required for amendments to such plans. If the revisions to the Base Daily Per Capita Water Use changes the water use target, the water use target must be revised as well.

In addition, a water supplier may change the method it uses to set its water use target, and report the method change and target revision in a 2010 amended plan or in its 2015 urban water management plan. Target method changes are not permitted in the 2020 plan or amended 2015 plans.

Methodology 4: Compliance Daily Per Capita Water Use

The following methodology addresses estimation of compliance daily per capita water use (in GPCD) in the years 2015 and 2020.

Definition of Compliance Daily Per Capita Use

Section 10608.12(e) states:

> *"Compliance daily per-capita use" means the gross water use during the final year of the reporting period, reported in gallons per capita per day.*

Estimation of Compliance-Year GPCD

Methodology 1: Gross Water Use and Methodology 2: Service Area Population shall be used to develop the two basic components for estimating compliance-year GPCD. This section discusses adjustments to compliance-year GPCD because of changes in distribution area caused by mergers, annexation, and other scenarios that occur between the baseline and compliance years.

Adjustments are allowed in calculating compliance-year GPCD for factors described in Section 10608.24. These adjustments are discussed in Methodology 8: Criteria for Compliance-Year Adjustment.

Distribution Area Expansion Caused by Mergers

If water suppliers merge, or one water supplier acquires a portion of another's service area, between the baseline period and the compliance year, they have two choices:

- Test compliance separately for each service area.
- Calculate a (compliance year) population weighted average of each system's target and determine compliance as a single entity using this weighted average.

Distribution Area Contraction

If a previously supplied portion included in the baseline is removed from the distribution area before the compliance years, water suppliers shall re-compute their baseline GPCD after eliminating the removed portion for all baseline years.

Distribution Area Expansion by Annexation of Already Developed Areas [18]

For areas annexed between the baseline and compliance years, a water supplier must determine Base Daily Per Capita Water Use, target water use, and compliance water use.

- Base Daily Per Capita Water Use for the annexed area shall be determined using the same baseline period as the water supplier's original service area (before the annexation). If such data are not available, the water supplier shall use a baseline period starting with the earliest year available for the annexed area and including ten years, if available. If no data exist for years before annexation, the water supplier shall use data from the year of annexation.
- Annexed areas shall be assigned a prorated target based upon the number of years between annexation and the end of 2020. For example, if a water supplier's target is based on a 20 percent reduction by 2020, and it annexes an area in 2017, this annexed area should show a 6 percent reduction in GPCD by 2020 relative to its 2017 GPCD.
- Compliance may be determined for the separate service areas (annexed and original), or for the combined service area using a (compliance year) population weighted average.

If compliance is determined separately for separate service areas, both areas must be in compliance for supplier to be in compliance.

Distribution Area Expansion by Annexation of Undeveloped Areas

No special adjustment calculation is needed for areas that were undeveloped during the baseline period but which were annexed and developed between the baseline period and compliance year. The impact on GPCD is accounted for by the estimation of compliance-year Gross Water Use and compliance-year population.

Existing Large Partial Customers Become Whole Customers

Large customers that pump groundwater or take surface water for landscape irrigation or other uses (depending on their municipal source solely for indoor use) may switch and use only the municipal source. This change will disrupt the baseline and compliance year comparison. Two adjustments are provided below:

- If the switch occurs during the baseline years, the landscape irrigation or other use should be included in the compliance-year gross water calculation.
- If the switch occurs between the baseline and compliance years, the water associated with irrigation use switches, properly documented and subjected to the requirements of the Model Water Efficient Landscape Ordinance adopted by DWR in 2009, may be excluded from the calculation of compliance-year Gross Water Use. Otherwise, the irrigation or other use must be included in both the baseline and compliance year gross water use calculations.

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[18] Annexation here refers to already developed and inhabited areas that may have relied upon groundwater until this point in time and were not previously connected to a municipal source.

Water Supplier Subject to Urban Water Management Plan Reporting Requirements between 2010 and 2020

Water suppliers that become subject to urban water management plan reporting requirements after 2010 also become subject to the new requirements of Section 10608 of the Water Code from the same year onward. These water suppliers are required to estimate their baseline GPCD and establish their 2020 GPCD targets using the same methodological guidelines that apply to other water suppliers. However, for testing compliance, such water suppliers may prorate these targets depending on the year the water supplier became subject to the new requirements.

For example, if a water supplier chooses a 2020 target that is 20 percent below its baseline GPCD, but it became subject to the new requirements only in 2017, it shall test compliance against a target that is 6 percent below its baseline GPCD.

Methodology 5: Indoor Residential Use

Definition of Indoor Residential Use

Section 10608.20(b)(2)(A) states:

> *For indoor residential water use, 55 gallons per capita daily water use as a provisional standard. Upon completion of the department's 2016 report to the Legislature pursuant to Section 10608.42, this standard may be adjusted by the Legislature by statute.*

Section 10608.42 states:

> *The department shall review the 2015 urban water management plans and report to the Legislature by December 31, 2016, on progress towards achieving a 20-percent reduction in urban water use by December 31, 2020. The report shall include recommendations on changes to water efficiency standards or urban water use targets in order to achieve the 20-percent reduction and to reflect updated efficiency information and technology changes.*

Section 10608.20(b)(2)(A) sets a provisional standard for efficient indoor use (55 GPCD) that urban retail water suppliers using target Method 2 must use to set their 2020 target. However, they are not required to demonstrate that this indoor residential target has actually been met—only that the overall target, which includes additional components for landscaped area water use and commercial, industrial, and institutional (CII) water use, has been met.

Section 10608.42 requires DWR to submit a report to the Legislature in 2016 that will include recommendations on changes to water use efficiency standards to reflect updated efficiency information and technological changes. DWR will conduct a study to assess whether the provisional indoor residential standard of 55 GPCD should be adjusted.

Based on the report DWR submits in 2016, the Legislature may change the indoor residential standard. The indoor residential standard is used only to set the target under Method 2; calculation of indoor usage by water supplier is not required for determining compliance with Method 2.

Methodology 6: Landscaped Area Water Use

The calculation of Landscaped Area Water Use requires a measurement (or estimate) of landscaped area and of the landscape water use per unit area (based on reference evapotranspiration [ET]). As with other urban water use measures under Section 10608, Landscaped Area Water Use is defined as a daily per capita rate of water use; consequently, Methodology 2: Service Area Population is used in calculating Landscaped Area Water Use.

Definition of Landscaped Area Water Use

For the Landscaped Area Water Use component of target Method 2, Section 10608.20 (b)(2)(B) states:

> *For landscape irrigated through dedicated or residential meters or connections, water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Chapter 2.7 (commencing with Section 490) of Division 2 of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992. An urban retail water supplier using the approach specified in this subparagraph shall use satellite imagery, site visits, or other best available technology to develop an accurate estimate of landscaped areas.*

All landscape irrigated by dedicated or residential meters must be included, including multifamily residential parcels. Definitions and calculations contained in the Model Water Efficient Landscape Ordinance (MWELO) are provided in Appendix B. These calculations give the Landscaped Area Water Use as a function of landscaped area and reference ET. The MWELO defines landscaped area as planting areas, turf areas, and water features. Landscaped area excludes footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designated for non-development (such as open spaces and existing native vegetation). Section 10608.20 (b)(2)(B) restricts the landscaped area to include only landscape irrigated through dedicated or residential meters or connections.

Landscaped area for the purposes of calculating the Method 2 target shall mean the water supplier's estimate or measurement of 2020 landscaped areas. Water suppliers shall develop a preliminary estimate (forecast) of 2020 landscaped areas for purposes of setting urban water use targets and interim urban water use targets under Subdivision 10608.20 (a) (1). For final compliance-year calculations, water suppliers shall update the estimate of 2020 landscaped areas using one of the techniques described in the following sections.

Approach to Calculating Landscaped Area Water Use

Water suppliers shall follow five steps to calculate Landscaped Area Water Use:

1. Identify applicable MWELO (1992 or 2010) for each parcel.
2. Estimate irrigated landscaped area for each parcel.

3. Determine reference evapotranspiration for each parcel.
4. Use the Maximum Applied Water Allowance (MAWA) equation from the applicable MWELO to calculate annual volume of landscaped area water use.
5. Convert annual volume to GPCD.

Identify Applicable MWELO for Each Parcel

Before computing landscaped area, water suppliers must determine how MWELO ordinances apply to specific parcels in their service areas. Two versions of MWELO apply according to the date when landscaping was installed in a given parcel:

- For landscaped areas installed on or after January 1, 2010, the MAWA equation and all applicable criteria from the 2009 version of the ordinance or its equivalent shall be used.
- For landscaped areas installed before January 1, 2010, the MAWA equation and all applicable criteria from the 1992 version of the ordinance or its equivalent shall be used.

For the purposes of this methodology, two important differences between the two ordinances are the ET adjustment factor and the inclusion of a special landscaped area for calculating a water allowance in the 2010 ordinance. The applicable definitions and calculations in these ordinances are provided in Appendix B.

Landscaped Area Water Use shall be calculated for each parcel (or groups of parcels with the same reference ET and applicable MWELO) using Maximum Applied Water Allowance (MAWA) computations from the applicable MWELO.

Water suppliers should use the best available information to determine which MWELO applies to each parcel. This may include date of submittal for MWELO design review, date of service establishment, and remote sensing information.

The calculations provided in Appendix B will yield water use estimates in gallons per year. The total Landscaped Area Water Use for the water supplier will equal the total Landscaped Area Water Use of all parcels in the water supplier’s service area. Because Landscaped Area Water Use is defined in units of GPCD, the result of the calculation above must be divided by Service Area Population and then converted from annual to daily use.

Measure Landscaped Area

The water supplier shall select a technique for measuring landscaped area that satisfies the following criteria:

- The landscaped area must be measured or estimated for all parcels served by a residential or dedicated landscape water meter or connection in the water supplier’s service area.
- Only irrigated landscaped area served by residential or dedicated landscape water meter or connection shall be included in the calculation of Landscaped Area Water Use. Landscape served by CII connections and non-irrigated landscape shall be excluded. (All references to landscaped area below shall mean irrigated landscaped area served by a residential or dedicated landscape meter or connection.)

Measurement Techniques

The following sections describe techniques that may be used to measure landscaped area. Water suppliers may use one or a combination of these techniques.

Field-Based Measurement. Field-based measurement of parcels' landscaped area may be accomplished by physical measurement using devices such as a total station, measuring wheel and compass, global positioning system (GPS), or other measuring devices having accuracy similar to these devices. Field-based measurement also may be obtained from landscape designs submitted to the water supplier for compliance with the MWELO or for other planning and billing purposes.

Measuring with Remote Sensing. The landscaped area may be measured by using remote sensing (aerial or satellite imaging) to identify the landscaped areas in conjunction with a GIS representation of the parcels in the water supplier's service area. A variety of remote-sensing techniques are available, and additional techniques may become available between now and 2020. DWR will allow the water supplier to select the remote-sensing technique that it prefers. However, the following conditions shall be met:

- The remote-sensing information must be overlaid onto a GIS representation of each parcel boundaries to estimate the irrigated landscaped area in each parcel.
- The remote-sensing imagery must have a resolution of 1 meter or less per pixel.
- The remote-sensing technique must be verified for accuracy by comparing its results to the results of field-based measurement for a subset of parcels selected using random sampling. The water supplier shall report the resulting percent error between the estimates of landscaped area produced by the remote-sensing technique and those produced by field-based measurements for the sampled parcels.
- DWR has not set its own standards for remote-sensing verification and sampling design. The water supplier shall provide a description of its remote-sensing technique (including imagery, data processing, and verification) when it reports its landscaped area for purposes of complying with provisions of the Water Code. Congalton and Green (1999)[19] and Stein et al. (2002)[20] are two references that describe professional standards for remote sensing.

Using Sampling to Estimate Landscaped Area on Small Parcels. The landscaped area for smaller-sized parcels may be calculated by measuring the percentage of total parcel area that is landscaped in a sample of similar parcels and applying that percentage to the remaining parcels. This technique may be used only for parcels with a total land area of 24,000 square feet or less. The parcels for which this technique is used shall be divided into groups, or strata, based on parcel size increments of 4,000 square feet or less. (For example, parcels up to 4,000 square feet would form one group, parcels between 4,001 and 8,000 square feet would form another group, and so forth.) Field-based measurement or remote sensing must be used to calculate the landscaped area for a subset of parcels sampled at random in each parcel size group. The percentage of landscaped area to total

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[19] Congalton, R. G., and K. Green, 1999. *Assessing the Accuracy of Remotely Sensed Data: Principles and Practices*. CRC Press, Boca Raton, FL.

[20] Stein, A., F. van der Meer, and B. Gorte, eds. 2002. *Spatial Statistics for Remote Sensing.* Kluwer Academic Publishers, Netherlands.

land area for the sampled parcels in each group can then be used to calculate the landscaped area for all other parcels in the group. Parcels greater than 24,000 square feet shall be measured directly.

Statistical sampling is a means to provide adequate information at reasonable cost. If implemented carefully, sampling allows the water supplier to develop accurate estimates of landscaped area for all relevant parcels from a subset of parcels. However, sampling shall not be used to estimate landscaped area for parcels larger than 24,000 square feet. Stratified sampling (random sampling in identified subgroups of parcels) should be used to estimate the landscaped area in different parcel size groups, as described earlier. Other characteristics of parcels may be used as a basis for selecting the strata in addition to parcel size.

DWR has not developed specific standards for sampling design. Urban water suppliers should follow standards of professional practice sufficient to demonstrate unbiased estimates of landscaped area. For example, Cochrane (1977)[21] and Lohr (2010)[22] provide guidance for sound sampling design.

Other Measurement Techniques. The water supplier may use another technique to measure landscaped area for each parcel other than the ones described previously if one becomes available in the future. However, the technique must meet similar conditions to those described above for remote sensing:

- The landscaped area information must be gathered or reported on a parcel basis, or it must be overlaid onto a GIS representation of each parcel's boundaries to calculate the landscaped area in each parcel.
- The technique must be tested for accuracy by comparing its results to the results of field-based measurement for a subset of parcels. Field-based measurement should be performed for a subset of parcels selected at random from those for which the technique has been used. The water supplier should report the percent error between the calculations of landscaped area produced by the selected technique and those produced by field-based measurements for the sampled parcels.

Estimate Reference Evapotranspiration

Calculations under the MWELO require determination of reference ET. Each parcels served by a residential or dedicated landscape water meter or connection in the water supplier's service area shall be assigned a reference ET based on one of the following methods:

- Appendix A of the 2009 ordinance contains tables of reference ET. In some cases, the water supplier may choose a single reference ET value most appropriate for all parcels in its service area. For parcels in geographic areas not covered in the Appendix A table, the ordinance provides the following direction for selecting the appropriate reference value: "For geographic areas not covered in Appendix A, use data from other cities located nearby in the same reference evapotranspiration zone, as found in the CIMIS Reference Evapotranspiration Zones Map, Department of Water Resources, 1999."

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[21] Cochrane, William G. 1977. *Sampling Techniques*. 3rd edition. Wiley; NY, NY.

[22] Lohr, Sharon. 2010. *Sampling: Design and Analysis*. Brooks/Cole Cengage, Boston, MA. 2nd edition.

- DWR has developed a spatial program (Spatial CIMIS) that provides interpolated ET data between weather stations. [23] The program can provide estimates of reference ET for any part of California with a resolution of 2 kilometer (km) by 2 km. Water suppliers may use this tool to assign reference ET to parcels. Any other CIMIS enhancements or additional stations formally adopted by DWR between 2010 and 2020 also may be used.
- Water suppliers may use local reference ET estimates that are not formally part of CIMIS or that make adjustments to CIMIS station estimates, provided that such estimates or adjustments are scientifically derived and of comparable reliability to CIMIS estimates. The water supplier shall explain why neither the CIMIS nor other approved DWR reference ET information is adequate, and shall provide the data and calculations used to develop the local reference ET estimate.

Apply MAWA Equation to Calculate Annual Volume

Appendix B provides the MAWA equations that apply to parcels. These equations, or their equivalents, will yield water use estimates in gallons per year. The total Landscaped Area Water Use for the water supplier will equal the total Landscaped Area Water Use of all parcels in the supplier’s service area.

Convert Annual Volume to GPCD

After the MAWA for all parcels has been summed to determine the total Landscaped Area Water Use portion of the Method 2 target, the total must be divided by Service Area Population and then by 365 to calculate the Landscaped Area Water Use in GPCD. Refer to Methodology 2: Service Area Population to complete this step. Because Landscaped Area Water Use is defined in units of GPCD, the result must be converted from annual to daily use.

Summary of Steps to Calculate Landscaped Area Water Use

Calculating Landscaped Area Water Use requires the following process:

1. Assign applicable MWELO (1992 or 2009) to each parcel.
2. Estimate landscaped area for each parcel.
    d. Select measurement technique(s) for landscaped area (for example, field based, remote sensing, or sampling).
    e. Apply technique(s) to calculate total landscaped area for each parcel. (This applies only to parcels for which landscaped area has not yet been measured.)
    f. Measure special landscape area (SLA) where applicable.
3. Determine the reference ET for each parcel.
4. Use the MAWA from the applicable MWELO to calculate Landscaped Area Water Use for all parcels.

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[23] California Irrigation Management Information System. The spatial model is available at http://www.cimis.water.ca.gov/cimis/cimiSatSpatialCimis.jsp.

   a. Use the equations, or their equivalents, to calculate the MAWA for each parcel or group of parcels (grouped according to applicable MWELO, reference ET, and presence of SLA).
   b. Sum the MAWA over all parcels to calculate the total annual Landscaped Area Water Use portion of the Method 2 target.

5. Divide the total from Step 4 by Service Area Population and then by 365 to calculate the Landscaped Area Water Use in GPCD.

Methodology 7: Baseline Commercial, Industrial, and Institutional Water Use

Baseline Commercial Industrial and Institutional (CII) Water Use is needed for urban water use target Method 2 (along with the indoor residential and landscape uses). It also affects the adjustment factors that agencies may consider at the time of testing compliance in 2015 and 2020 by allowing them to make adjustments based on "substantial changes" in CII relative to Baseline CII Water Use per Section 10608.24 (d)(1)(B). The definition of "substantial change" and adjustments are discussed in Methodology 8: Criteria for Adjustments to Compliance Daily Per Capita Water Use.

Definition of Baseline CII Water Use

Section 10608.12 defines Baseline CII Water Use and related concepts as follows:

> *(c) "Baseline commercial, industrial, and institutional water use" means an urban retail water supplier's base daily per capita water use for commercial, industrial, and institutional users.*
>
> *(d) "Commercial water user" means a water user that provides or distributes a product or service.*
>
> *(h) "Industrial water user" means a water user that is primarily a manufacturer or processor of materials as defined by the North American Industry Classification System code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development.*
>
> *(i) "Institutional water user" means a water user dedicated to public service. This type of user includes, among other users, higher education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions.*

Use of Baseline CII Water Use

Urban retail water suppliers are given several methods for calculating water use targets. Method 2 allows them to calculate a target by using three components: Indoor Residential Use, Landscaped Area Water Use, and Baseline CII Water Use. Section 10608.20 (b)(2)(C) specifies that the CII portion of the target is to be calculated as follows:

> *For commercial, industrial, and institutional uses, a 10 percent reduction in water use from the baseline commercial, industrial, and institutional water use by 2020.*

Calculation of Baseline CII Water Use

Baseline periods that a retail water supplier may use to determine Baseline CII Water Use shall follow the same direction required for Base Daily Per Capita Water Use under Section 10608.12.(b):

> *"Base daily per capita water use" means any of the following:*
>
> *(1) The urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.*
>
> *(2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the calculation described in paragraph (1) up to an additional five years to a maximum of a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.*

A retail water supplier must have CII data for the entire baseline period used in the water supplier's calculation of Base Daily Per Capita Water Use. If the CII data do not exist, the retail water supplier should use another water use target method.

For each year in the baseline period, the volume of Baseline CII Water Use shall be divided by the Service Area Population (see Methodology 2), and the average of those calculations, converted to a daily rate, is the Baseline CII Water Use for the purpose of calculating the Method 2 target as defined in Section 10608.20(b)(2). The procedure for averaging the annual per capita CII use is the same as for calculating Base Daily Per Capita Water Use (refer to Methodology 3: Base Daily Per Capita Water Use).

The CII component of the 2020 target for Method 2 shall be the Baseline CII Water Use (in GPCD) multiplied by 0.9.

Process Water Exclusion

A retail water supplier may elect to exclude process water from its calculation, consistent with Section 10608.24(e):

> *When developing the urban water use target pursuant to Section 10608.20, an urban retail water supplier that has a substantial percentage of industrial water use in its service area, may exclude process water from the calculation of gross water use to avoid a disproportionate burden on another customer sector.*

If a water supplier elects to exclude process water, it must do so for baseline and compliance year per capita water use and for baseline CII water use. DWR regulations that define when and how process water can be excluded from Gross Water Use and Baseline CII Water Use calculations are provided in Appendix D.

Adjustments for Multifamily Residential Connections

A retail water supplier whose baseline CII data includes some multifamily residential uses must demonstrate that it can accurately adjust the data to remove those uses.

In cases where the retail water supplier can estimate the population in multifamily residences included in the CII data, the supplier must do both of the following:

1. Use the adjustment procedure described below in Adjustments for Residential Uses in CII Connections to remove indoor residential uses from the CII data.
2. Assure that landscaped area in the CII data is excluded from the calculations of Landscaped Area Water Use.

In situations where the supplier cannot estimate the population in multifamily residences included in the CII data, Method 2 cannot be used to set the water supplier's water use target.

Adjustments for Residential Uses in CII Connections

Some CII connections also may serve group quarters or other residential uses. Examples could include campus dormitories, military base housing, and apartments that are served by a CII connection. Water use target Method 2 already provides an indoor use allowance of 55 GPCD for such residents. To ensure that this indoor use is not double-counted, the following steps must be used to adjust the CII component of the target water use under Method 2:

1. Estimate the average population served by CII connections during the baseline period and whose residentes use is included in the water supplier's unadjusted Baseline CII Water Use.
2. Calculate the average daily volume of target Indoor Residential Use associated with this population by multiplying the result of Step 1 by the 55-GPCD target indoor use specified for Method 2.
3. Convert the unadjusted CII GPCD target (the Baseline CII Water Use times 0.9) to an average daily volume by multiplying by Service Area Population.
4. Subtract the average daily volume calculated in Step 2 from the unadjusted CII daily volume calculated in Step 3.
5. Divide the result from Step 4 by Service Area Population to give the adjusted Baseline CII Water Use in GPCD for use in calculating the water use target for Method 2.

Methodology 8: Criteria for Adjustments to Compliance Daily Per Capita Water Use

Definition of Adjustments to Compliance Daily Per Capita Water Use

Section 10608.24(d) states:

> *(1) When determining compliance daily per capita water use, an urban retail water supplier may consider the following factors:*
>
> *(A) Differences in evapotranspiration and rainfall in the baseline period compared to the compliance reporting period.*
>
> *(B) Substantial changes to commercial or industrial water use resulting from increased business output and economic development that have occurred during the reporting period.*
>
> *(C) Substantial changes to institutional water use resulting from fire suppression services or other extraordinary events, or from new or expanded operations, that have occurred during the reporting period.*
>
> *(2) If the urban retail water supplier elects to adjust its estimate of compliance daily per capita water use due to one or more of the factors described in paragraph (1), it shall provide the basis for, and data supporting, the adjustment in the report required by Section 10608.40.*

Calculation of Adjustments to Compliance GPCD

To be developed.

[Application of these adjustments will not occur until a compliance year. This methodology requires further development including completion of weather normalization modeling. Expected completion date is early 2011.]

Methodology 9: Regional Compliance

According to Sections 10608.20(a)(1) and 10608.28, urban retail water suppliers may plan, comply, and report on a regional basis, an individual basis or both. Each group of water suppliers agreeing among themselves to plan, comply, and report as a region is referred to in this Methodology as a "regional alliance."

Legislative Guidance for Regional Compliance

Section 10608.20(a)(1) states:

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

Section 10608.28 states:

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

Criteria for Water Suppliers that May Report and Comply as a Region

To form a regional alliance, water suppliers must meet at least one of the following criteria:

- Water suppliers are recipients of water from a common wholesale water supplier. For this purpose, the State Water Project and the Central Valley Project are not considered wholesale water suppliers. Wholesale water suppliers are not required to establish and meet targets for daily per capita water use. Wholesale water suppliers serving in the role of a regional alliance are representing the urban retail water suppliers that are members of the alliance and compliance with a regional target is on behalf of the member suppliers and not the wholesaler supplier itself.
- Water suppliers are partners with a common regional agency authorized to plan and implement water conservation.
- Water suppliers are part of a regional water management group as defined in Water Code section 10537.
- Water suppliers are part of an integrated regional water management funding area, which for this purpose is interpreted to mean an Integrated Regional Water Management (IRWM) planning area.
- Water suppliers are located in the same hydrologic region, which for this purpose refers to the 10 hydrologic regions as shown in the California Water Plan. For situations where water suppliers may serve areas in more than one hydrologic region, the majority of each water supplier's Service Area Population must be in the hydrologic region being identified as a regional alliance.
- Water suppliers join through appropriate geographic scales for which these methodologies can be applied. For this provision, water suppliers' service area boundaries must be contiguous.

Tiered Regional Alliances

In general, urban retail water suppliers can belong to only one regional alliance for the purpose of establishing and complying with urban water use targets. An exception is when regional alliances are tiered so that the members of the smallest alliance are all members of the larger alliance or alliances.

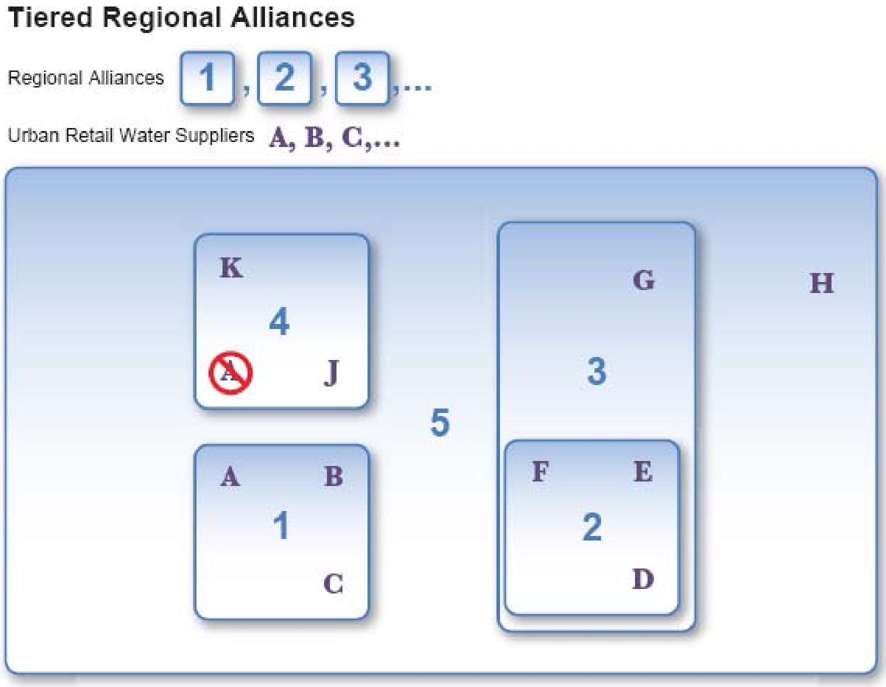

FIGURE 6:
EXAMPLE OF TIERED ALLIANCES

Figure 6 illustrates tiered alliances. For example, supplier A forms an alliance with suppliers B and C (Alliance 1). Supplier A cannot also form an alliance with suppliers J and K unless the A,J,K alliance were to include B and C as well. Water suppliers D, E, and F could comply as regional Alliance 2, or include supplier G and comply as regional Alliance 3. Alternatively, all suppliers in Figure 6 could comply as Alliance 5. The tiered alliance requirements are only for compliance with urban water use targets and do not apply to other regional water management activities or partnerships.

Calculation of Targets and Compliance GPCD

Calculation of Regional Targets

Water suppliers wishing to test compliance regionally are permitted to do so. Water suppliers in a regional alliance have three options for calculating their regional targets. Under the first option, which preserves maximum flexibility at the supplier level, each supplier in a regional alliance would first calculate its individual target as if it were complying individually. These individual targets should then be weighted by each supplier's population and averaged over all members in the alliance to obtain the regional target.[24] For the 2011 urban water management plans, suppliers may use their current population data for generating the regional targets. However, for testing compliance in 2015 and 2020, the population weighting of the individual targets must be based upon the compliance-year population data. A retail water supplier may update its target in 2015 (see Water Code section 10608.20(g) and any such modifications made to individual targets after 2011 must be incorporated into updated regional targets and reported in the compliance year 2015. For those urban retailers or alliances that choose method 2 for developing a target (see Water Code section 10608.20(b)(2)), the target must be revised and reported in 2020. A modification in any individual target or a change in membership in a regional alliance will require a recalculation of the regional target.

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

A third approach is to calculate regional gross water use or population directly for the entire regional alliance area. Regional base daily per capita use and a regional water use target would then be derived. Like the second approach, members of alliances using this approach must use the same baseline period and the same target method. A regional alliance must meet the requirements of Section 10608.22. The regional target may not exceed 95 percent of the region's 5-year Base Daily Per Capita Water Use. Methodology 3: Base Daily Per Capita Water Use describes in detail the interpretation and calculations required under Section 10608.22.

Calculation of Regional Compliance Daily Per Capita Water Use

Gross Water Use and Service Area Population must be reported for each supplier during the compliance year. If applicable, adjustments for evapotranspiration and rainfall, fire suppression, and changes in distribution area should be made for each individual water supplier. Adjustments to Gross Water Use for extraordinary economic growth can be

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[24] Assume there are (N) suppliers in an alliance, with individual targets $(T_1, T_2, \dots, T_N)$ and population $(P_1, P_2, \dots, P_N)$, where the subscript on the individual targets and population denote the identity of each supplier. Then, total population in a regional alliance (RP) becomes:

$$RP = P_1 + P_2 + \cdots + P_N$$

The regional target (RT) can be derived as a weighted average of the individual supplier targets as follows:

$$RT = (P_1 * T_1 + P_2 * T_2 + \cdots + P_N * T_N)/RP$$

applied either to the individual supplier's data or to the aggregate regional alliance data (but not both), depending upon availability of suitable data and methods. Regional compliance daily per capita water use shall be calculated as the aggregate regional Gross Water Use divided by the aggregate Service Area Population.

Data Reporting for a Regional Alliance

A regional alliance must send DWR a letter stating that an alliance has been formed and provide a list of the water supplier members. This letter should be sent by July 1, 2011, for alliances formed before submitting 2010 urban water management plans, or in ninety days after an alliance has been formed after July 1, 2011. In the case of tiered alliances, a retail water supplier cannot be cited as a member of a regional alliance unless it acknowledges its membership in that alliance in its urban water management plan.

DWR will collect data pertaining to regional alliances through three documents: (1) through the individual supplier urban water management plans; (2) through the regional urban water management plans; and (3) through the regional alliance reports.

Individual Supplier Urban Water Management Plans

All members of a regional alliance must include the following data in their individual urban water management plans unless they are participating in a regional urban water management plan (applicable urban water management plan dates are shown in parentheses):

- A list of all of its regional alliances. If a supplier is a member of tiered alliances, it must name all the alliances it is a member of
- Baseline Gross Water Use and Service Area Population (2010, 2015, 2020)
- Individual 2020 Urban Water Use Target (2010, 2015, 2020) and Interim 2015 Urban Water Use Target (2010)
- Compliance Year Gross Water Use (2015 and 2020) and Service Area Population (2010, 2015, 2020)
- Adjustments to Gross Water Use in the compliance year (2015, 2020)
- Water suppliers who choose Target Method 2 also must provide Landscaped Area Water Use and Baseline CII Water Use data (2010, 2015, 2020)
- Water Suppliers who choose Target Method 4 must provide the components of calculation as required by Target Method 4. Appendix C describes Target Method 4 and the regional compliance reporting that applies to that method (2010, 2015, 2020)

Regional Urban Water Management Plans

Members of regional alliance can forgo submitting individual urban water management plans and submit a regional urban water management plan. These regional urban water management plans are different from the regional alliance reports in that they must meet all the urban water management plan reporting requirements. The water use target data can be reported in the regional plan in either of two ways:

- The regional plan can report all the data elements that are now required to be included in the individual urban water management plans pertaining to this program (see section above titled Individual Supplier Urban Water Management Plans), for each supplier in the alliance. It would also report the same data elements aggregated over all members in the alliance.
- The regional plan may report some data elements only in aggregate for the alliance as a whole (not for each individual member). For example, the plan may report Service Area Population only for the regional alliance if the regional population data are more accurate or available. If the Service Area Population is only reported on a regional basis, then Base Daily per Capita Use, Compliance Daily per Capita Use, and Urban Water Use Targets would be calculated and reported only on a regional basis. Water suppliers that are part of a regional alliance that only reports a regional population can only develop a regional Urban Water Use Target and comply with this target regionally. Developing individual targets and testing compliance at the individual level is not possible unless an individual Service Area Population is calculated.

Regional Alliance Report

For regional alliances that do not submit a regional urban water management plan, DWR will require a regional alliance report. This report shall include all the water use target data elements that are now required to be included in the individual urban water management plans (see section above titled Individual Supplier Urban Water Management Plans) for each supplier in the alliance, and also shall include the alliance-level aggregates.

Memoranda of Understanding or Agreements for Regional Alliances

DWR will not review or approve the terms of memoranda of understanding (MOUs) or legal agreements that water suppliers use to create and manage regional alliances. However, terms of the agreements shall be consistent with all applicable sections of the Water Code. DWR will presume that water suppliers understand the consequences if partner suppliers withdraw from a regional alliance.

Compliance Assessment for Water Suppliers Belonging to a Regional Alliance

Compliance will be assessed based upon how an individual retail water supplier performs relative to its individual target or how the retail water supplier’s regional alliance performs as a whole relative to its regional target. Wholesale suppliers are not themselves subject to compliance assessment. The following guidelines will be used to assess compliance:

- If a regional alliance meets its regional target, all suppliers in the alliance will be deemed compliant. For tiered alliances, if a smaller alliance does not meet its water use target, the member agencies can still be in compliance if a larger alliance is in compliance. Conversely, members of a smaller alliance can be in compliance if the smaller alliance complies while the larger alliance fails. If a regional alliance fails to meet its regional target, water suppliers in the alliance that meet their individual targets will be deemed compliant.

- Water suppliers in alliances that meet neither their individual targets nor their regional targets will be deemed noncompliant. These suppliers can still apply for grant funds if their application is accompanied by a plan that demonstrates how the funds being sought will bring them into compliance with their targets (Section 10608.56).

Withdrawal from a Regional Alliance before 2020

If a water supplier withdraws from a regional alliance, the withdrawing water supplier must then comply individually. The water suppliers remaining in the regional alliance must revise regional baseline and target data and alliance membership in the subsequent UWMP plan. The memorandum of understanding or other legal agreements governing the alliance may define additional consequences or remedies.

Dissolution of a Regional Alliance before 2020

If a regional alliance dissolves before 2020, each affected water supplier must then comply individually or form or join another alliance. An affected water supplier that had not previously submitted an individual urban water management plan (for example, if it had participated in a regional urban water management plan for a regional alliance that has dissolved) has to submit an urban water management plan or a regional water management plan. The memorandum of understanding or other legal agreements governing the alliance may define additional consequences or remedies.

APPENDIX A

Alternative Methodology for Service Area Population

Water suppliers without access to detailed population data should develop population estimates by anchoring their year 2000 residential connections to the year 2000 census population estimate, and then scaling this estimate backward and forward using data for active residential connections. The procedure for calculating population from connections first requires a water supplier to identify the census blocks that lie in its (year 2000) distribution area. The availability of a GIS distribution area map for the year 2000 makes this first step relatively easy.

If no GIS boundary map of the distribution area is available, a water supplier will have to perform this exercise manually. The U. S. Census Bureau's county/tract/block maps should serve as the primary tool for this matching exercise.[25] First select the appropriate county. Next, the first file labeled "CBC06xxx_000.pdf" provides the detailed map numbering scheme for the entire county. The relevant maps from this list can then be used online or printed to locate the appropriate census blocks.

It is also relatively easy to scan a paper map of the distribution area (in 2000), digitize and geo-reference the boundary (and internal areas that need to be excluded), and overlay it electronically on a census map to identify which census blocks lie in the 2000 distribution area. Category 3 water suppliers may be able to access these capabilities through their local association of governments.

Step 1: Finalize Census Blocks in the 2000 Distribution Area

Some census blocks may straddle the water supplier's year 2000 distribution area boundary line. In such cases, if half or more of the block's area appears to lie within the boundary, the water supplier should include it; otherwise, it should exclude the block.

Census blocks are grouped into block groups. Blocks that identify places such as college campuses, military installations, or correctional institutions are organized into a

What Is a Census Block?

A census block is the smallest geographical unit used by the Census Bureau. Census blocks are areas bounded on all sides by visible features, such as streets, roads, streams, and railroad tracks, and by invisible boundaries, such as city, town, township, and county limits, property lines, and short, imaginary extensions of streets and roads. Generally, census blocks are small in area; for example, a block may be bounded by city streets. However, census blocks in sparsely settled areas may contain many square miles of territory.

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[25] These maps can be accessed at http://ftp2.census.gov/geo/maps/blk2000/st06_California/County/.

single block group that, taken together, corresponds exactly with the boundary of such a place. Census blocks associated with such institutions in the distribution area, but with wholly private sources of supply, can thus be cleanly removed from the population estimate.

Census block groups aggregate up to the next level of geography that is called a census tract. Blocks have a unique identification number only in a tract, not across tracts. When identifying blocks that lie in the distribution area, both block and tract identification numbers are needed to correctly link the selected blocks with their corresponding population data.

What Is a Census Block Group?

A block group (BG) is a cluster of census blocks having the same first digit of their four-digit identifying numbers in a census tract. For example, block group 3 (BG 3) in a census tract includes all blocks numbered from 3000 to 3999. BGs generally contain between 600 and 3,000 people, with an average size of 1,500 people. BGs on American Indian reservations, off reservation trust lands, and special places must contain a minimum of 300 people. (Special places include correctional institutions, military installations, college campuses, worker's dormitories, hospitals, nursing homes, and group homes.)

Step 2: Scale Population Information from Census Blocks to Distribution Area

Once the census blocks lying in the year 2000 distribution area are identified, each block's population in 2000 can be obtained from the Census Bureau's website. This requires the following steps:[26]

1. Go to www.census.gov
2. Click on "American FactFinder" tab in left navigation column.
3. Click on "Download Center" in the left navigation column.
4. In the table that appears, click on the "Census 2000 Summary File 1 (SF-1) 100-Percent Data" link.
5. Under geographic summary level, select "All Blocks in a County (101)."
6. Follow the prompts to select state and county.
7. Under Select a Download Method, choose "Selected Detailed Tables."
8. Click on "Go."

Place of Residence

Each person included in the census is counted at his or her usual place of residence, which is the place where he or she lives and sleeps most of the time. If a person has no usual residence, the person is counted where he or she was staying on Census Day (April 1). People temporarily away from their usual residence, such as on a vacation or business trip, are counted at their usual place of residence. People who moved around Census Day are counted at the place they consider to be their usual residence. A person's usual place of residence is not necessarily the same as legal residence or voting residence. A detailed set of enumeration rules guides how the Census Bureau counts individuals. An attempt is made to count all individuals, whether they reside in housing units or in group quarters.

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[26] Note that these steps apply as of June 2010. Link names and other elements of the Census Bureau's website may change in future. The same caution applies to other website directions in this appendix.

9. When prompted with table choices, select at a minimum "P1. Total Population" and "P37. Group Quarters Population by Group Quarter Type." You can select multiple tables at once by holding down the Ctrl key as you select them.
10. Click "Add" to add them to the Current Table Selections box.
11. Select "Next."
12. Select "Start Download."

A file will be created for the user in a delimited text format (the character " | " will be the delimiter which the user will need to specify while importing the text file into Excel for further manipulation) containing total population and any additional information the user selects by block. From this list, select the blocks identified as falling in the water supplier's year 2000 actual distribution area in Step 1 and obtain the aggregate population for the water supplier's service area.

P1. Total Population

The "Total Population" selection includes population residing in housing units as well as in group quarters. Housing units include structures such as single-family homes, multifamily homes, mobile homes, boats, RVs, and vans. Group quarters include institutions such as correctional facilities, nursing homes, hospital wards and hospices, psychiatric hospitals, juvenile institutions, college dormitories, military quarters, agriculture worker's dormitories, logging camps, and other institutions. The full list of what is included in group quarters is long and is intended to capture a variety of residency scenarios to make the population count as complete as possible. This list can be obtained from the Census Bureau's website.

In most cases, additional editing or manipulation of total year 2000 population should not be required. Census blocks associated with privately supplied customers would already have been removed from the distribution area definition. However, if additional privately supplied customers need to be removed from the population count, the group quarter population estimates may be used to identify the population associated with such customers and the relevant block level group quarter population estimates subtracted from total population.

P37. Group Quarters Population by Group Quarter Type

This selection provides a breakdown of the group quarter population into the following categories: correctional institutions; nursing homes; other institutionalized populations; college dormitories including college quarters off campus; military quarters; other non-institutional group quarters.

Step 3: Obtain Population by Structure Type

To estimate population per connection, agencies are advised to develop at least two separate ratios: one for population per single-family connection, and one for population per multifamily connection, which includes apartment complexes and other types of group quarters. This information can also be obtained from the Census Bureau website.

1. Go to www.census.gov
2. Click on "American FactFinder" tab in left navigation column.
3. Click on "Download Center" in the left navigation column.
4. Select the "Census 2000 Summary File 3 (SF-3) Sample Data" link.
5. Under geographic summary level, select "All Block Groups in a County (150)."
6. Follow the prompts to select state and county.

7. Under Select Download Method, select "Select Detailed Tables."
8. Click on "Go."
9. When prompted with table choices, select at a minimum "P1. Total Population" and "H33. Total Population in Occupied Housing Units by Tenure by Units in Structure."
10. Click on "Next."
11. Click on "Start Download."

H33. Total Population in Occupied Housing Units by Tenure by Units in Structure

This selection provides a breakdown of population by the following types of structures:

Owner occupied, 1 detached unit in structure
Owner occupied, 1 attached unit in structure
Owner occupied, 2 units in structure
Owner occupied, 3-4 units in structure
Owner occupied, 5-9 units in structure
Owner occupied, 10-19 units in structure
Owner occupied, 20-49 units in structure
Owner occupied, 50 or more units in structure
Owner occupied, mobile home
Owner occupied, boat, RV, van, etc.
(Repeated for renters)

A file will be created for the user in a delimited text format (the character " | " will be the delimiter which the user will need to specify while importing the text file into Excel for further manipulation) containing total population split across many categories. Also, these data are for block groups, not blocks. The first letter in a block's identifier indicates the block group it belongs to. Total population in a block group obtained from Summary File 3 may not exactly match block group population were it to be estimated from Summary File 1 for the purpose of comparison. This is because the former is created from a sample, the latter from the full data. Sample weights ensure that the two estimates of total population converge for higher levels of aggregation, such as a county, but they may not exactly match at the block-group level.

Group quarters are not included in the definition of housing units. Therefore, total population residing in occupied housing units does not include residents of group quarters. Therefore, total population must also be obtained from Summary File 3.

Step 4: Obtain Active Connections Data

Water suppliers differ in their metering of certain structure types. For example, some water suppliers may typically use individual metering of single-family attached structures, while other water suppliers may use master-metering. Water suppliers must first decide, based upon local knowledge and level of detail available in the billing system, how different structure types will be allocated to either the single-family or multifamily category.

For each baseline year (and the census year 2000 if it is not included in the baseline period), tabulate total single-family and total multifamily connections. Remove from the tabulation any connections that were inactive during the entire year.

For each block group, aggregate population for the single-family structure category, including both renters and owners. Subtract this estimate from total block group population obtained from Summary File 3. The difference is an estimate of population residing in multifamily structures, including group quarters.

Develop a ratio for each block group indicating how its total population is split between the single-family and multifamily structures. Then, for each block in the distribution area, apply its corresponding block-group ratio to split the block-level total population (from Summary File 1) into the single-family and multifamily categories. Aggregate these block-specific splits to obtain total population residing in single-family and multifamily structures in the entire distribution area.

Step 5: Develop Population Estimates for Non-Census Years

For the census year 2000, obtain persons per single-family connection and per multifamily connection. Apply these ratios to active connections data for the non-census years to estimate non-census-year population. Figure A-1 provides a pictorial description of the approach outlined above.

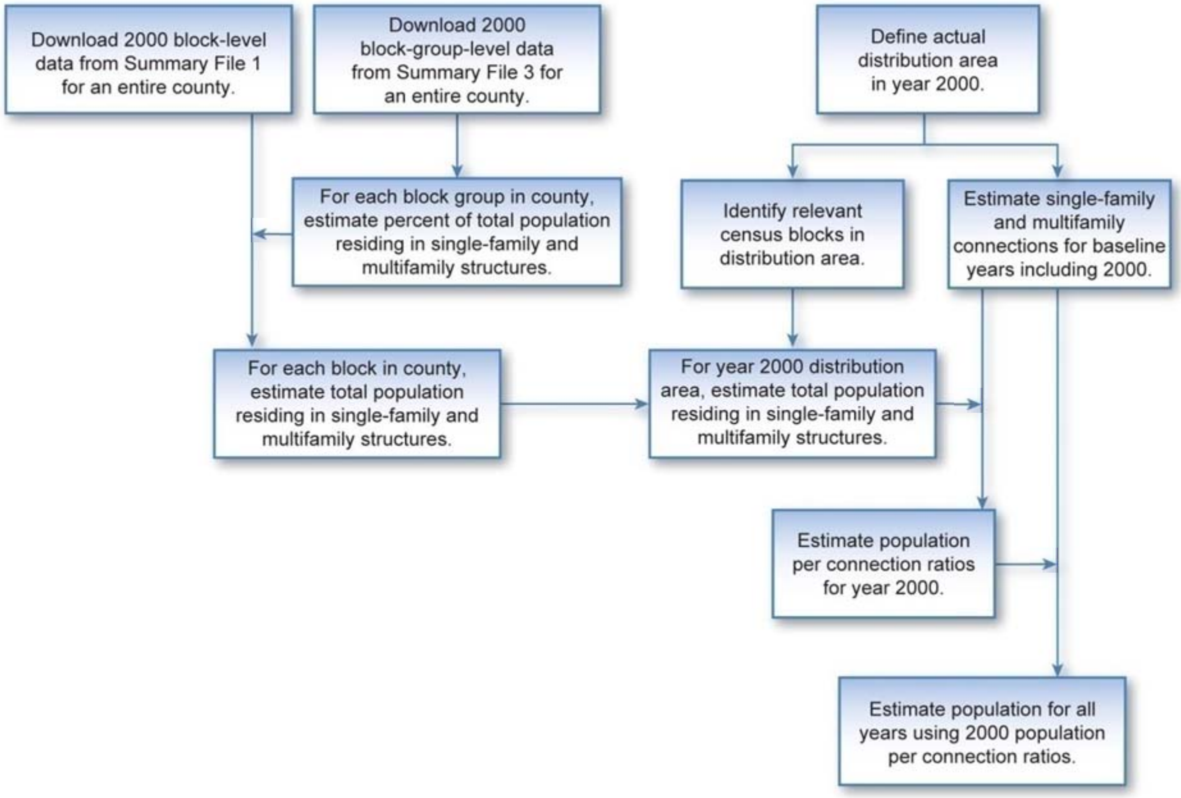

FIGURE A-1
POPULATION PER RESIDENTIAL CONNECTION METHOD

Two exceptions to this procedure are possible:

- Water suppliers are permitted to split their multifamily accounts into additional categories. For example, water suppliers may divide the multifamily sector into categories based upon units in the structure, assuming such information is reliably recorded in their billing system. The water supplier can calculate persons-per-connection for each of these categories, as long as they use the same methodology for all base period and compliance years. Water suppliers may substitute a person-per-unit ratio in place of a person-per-connection ratio to scale multifamily population if their billing systems include reliable data about total units in each multifamily structure. In such a case, population in group quarters would need to be scaled separately using a persons-per-connection ratio specific to group quarters.

- Water suppliers that cannot identify multifamily connections at present should use a single ratio (total population per single-family connection) to obtain population for the non-census years. DWR recommends that these water suppliers begin improving their data systems so that population estimates for the 2015 and 2020 compliance years are more accurate. DWR also encourages water suppliers to identify multifamily accounts separately from CII accounts.

Step 6: Further Improvements to Estimates

Water suppliers that calculate population using the per-connection method described here are encouraged to improve these estimates by including auxiliary information from other sources such as the California Department of Finance, Current Population Survey, the American Housing Survey, building permits data, and similar sources. If they use such information they should maintain consistency between the baseline and compliance years, document the methodology, and provide details about the magnitude of the adjustments made to the population estimated using Steps 1 through 5.

APPENDIX B

Model Water Efficient Landscape Ordinance Definitions and Calculations

The Model Water Efficient Landscape Ordinance (MWELO) was originally added to the California Code of Regulations (Title 23, Division 2, Chapter 2.7) in 1992 and was revised in 2009. Paragraph 492.4 defines the calculation of Maximum Applied Water Allowance (MAWA).

For landscaped areas that are installed on or after January 1, 2010, the MAWA equation and all applicable definitions of terms from the revised ordinance are as follows:

> *Maximum Applied Water Allowance (MAWA) = (ETo) (0.62) [(0.7 x LA) + (0.3 x SLA)]*
>
> *Maximum Applied Water Allowance (MAWA) is in gallons per year*
>
> *ETo = Reference Evapotranspiration (inches per year). Reference evapotranspiration is used as the basis of determining the Maximum Applied Water Allowance so that regional differences in climate can be accommodated." Reference Evapotranspiration values for each location can be found in Appendix A of the 2010 Model Water Efficient Landscape Ordinance.*
>
> *0.62 = Conversion Factor (from inches/year to gallons/sq ft/year)*
>
> *0.7 = ET Adjustment Factor (ETAF). When applied to reference evapotranspiration, the ETAF "adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape."*
>
> *LA = Landscaped Area including SLA (square feet), which includes "all the planting areas, turf areas, and water features in a landscape design plan subject to the Maximum Applied Water Allowance calculation. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation)."*
>
> *0.3 = Additional Water Allowance for Special Landscape Area (SLA), resulting in an effective ETAF for SLA of 1.0.*
>
> *SLA = Special Landscaped Area (square feet), which is defined as "an area of the landscape dedicated solely to edible plants, areas irrigated with recycled water, water features using recycled water and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface."*

For landscaped areas that are installed before January 1, 2010, the MAWA equation and all applicable definition of terms from the original 1992 version of the ordinance are as follows:

> *Maximum Applied Water Allowance (MAWA) = (ETo) (0.62) (0.8 x LA)*
>
> *Maximum Applied Water Allowance (MAWA) is in gallons per year*
>
> *ETo = Reference Evapotranspiration (inches per year). Reference Evapotranspiration values for each location can be found on page 38.10 of the Model Water Efficient Landscape Ordinance.*
>
> *0.62 = Conversion Factor (from inches/year to gallons/sq ft/year)*
>
> *0.8 = ET Adjustment Factor (ETAF). When applied to reference evapotranspiration, the ETAF "adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape."*
>
> *LA = Landscaped area includes the entire parcel less the building footprint, driveways, non-irrigated portions of parking lots, landscapes such as decks and patio, and other non-porous areas. Water features are included in the calculation of the landscaped area. Areas dedicated to edible plants, such as orchards or vegetable gardens are not included.*

APPENDIX C

Method 4 for Determining Water Use Targets

TO BE DEVELOPED

APPENDIX D

Regulations for Implementing Process Water Provisions

TO BE DEVELOPED

K

STANDARDIZED TABLES

WUEdata Entry Exceptions

The data from the tables below will not be entered into WUEdata tables (the tabs for these tables' worksheets are colored **purple**). These tables will be submitted as separate uploads, in Excel, to WUEdata.

Process Water Deduction

SB X7-7 tables 4-C, 4-C.1, 4-C.2, 4-C.3, 4-C.4 and 4-D

A supplier that will use the process water deduction will complete the appropriate tables in Excel, submit them as a separate upload to the WUE data tool, and include them in its UWMP.

Target Method 2

SB X7-7 tables 7-B, 7-C, and 7-D

A supplier that selects Target Method 2 will contact DWR (gwen.huff@water.ca.gov) for SB X7-7 tables 7-B, 7-C, and 7-D.

Target Method 4

These tables are only available online at http://www.dwr.water.ca.gov/wateruseefficiency/sb7/committees/urban/u4/ptm4.cfm

A supplier that selects Target Method 4 will save the tables from the website listed above, complete the tables, submit as a separate upload to WUE data, and include them with its UWMP.

SB X7-7 Table 0: Units of Measure Used in UWMP* *(select one from the drop down list)*
Acre Feet
**The unit of measure must be consistent with Table 2-3*
NOTES: Years are provided in fiscal year ending (e.g., FY 2001 is July 1st, 2000 to June 30th, 2001)

SB X7-7 Table-1: Baseline Period Ranges

Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	16,950	Acre Feet
	2008 total volume of delivered recycled water	7,865	Acre Feet
	2008 recycled water as a percent of total deliveries	46.40%	Percent
	Number of years in baseline period[1, 2]	10	Years
	Year beginning baseline period range	2001	
	Year ending baseline period range[3]	2010	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2006	
	Year ending baseline period range[4]	2010	

[1] If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period. *[2] The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.*

[3] The ending year must be between December 31, 2004 and December 31, 2010.

[4] The ending year must be between December 31, 2007 and December 31, 2010.

NOTES: Years are provided in fiscal year ending (e.g., FY 2001 is July 1st, 2000 to June 30th, 2001)

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

SB X7-7 Table 3: Service Area Population

Year		Population
10 to 15 Year Baseline Population		
Year 1	2001	16,200
Year 2	2002	16,363
Year 3	2003	16,506
Year 4	2004	16,612
Year 5	2005	16,649
Year 6	2006	16,600
Year 7	2007	16,599
Year 8	2008	16,547
Year 9	2009	16,581
Year 10	2010	16,650
Year 11		
Year 12		
Year 13		
Year 14		
Year 15		
5 Year Baseline Population		
Year 1	2006	16,600
Year 2	2007	16,599
Year 3	2008	16,547
Year 4	2009	16,581
Year 5	2010	16,650
2015 Compliance Year Population		
2015		17,000

NOTES:

SB X7-7 Table 4: Annual Gross Water Use *

Baseline Year *Fm SB X7-7 Table 3*		**Volume Into Distribution System** *This column will remain blank until SB X7-7 Table 4-A is completed.*	**Deductions**					**Annual Gross Water Use**
			Exported Water	**Change in Dist. System Storage** (+/-)	**Indirect Recycled Water** *This column will remain blank until SB X7-7 Table 4-B is completed.*	**Water Delivered for Agricultural Use**	**Process Water** *This column will remain blank until SB X7-7 Table 4-D is completed.*	
10 to 15 Year Baseline - Gross Water Use								
Year 1	2001	14,528	-	-	-	-	-	14,528
Year 2	2002	9,331	-	-	-	-	-	9,331
Year 3	2003	8,543	-	-	-	-	-	8,543
Year 4	2004	8,320	-	-	-	-	-	8,320
Year 5	2005	8,492	-	-	-	-	-	8,492
Year 6	2006	8,363	-	-	-	-	-	8,363
Year 7	2007	8,861	-	-	-	-	-	8,861
Year 8	2008	9,085	-	-	-	-	-	9,085
Year 9	2009	8,795	-	-	-	-	-	8,795
Year 10	2010	10,632	-	-	-	-	-	10,632
Year 11	0	-			-		-	-
Year 12	0	-			-		-	-
Year 13	0	-			-		-	-
Year 14	0	-			-		-	-
Year 15	0	-			-		-	-
10 - 15 year baseline average gross water use								**9,495**
5 Year Baseline - Gross Water Use								
Year 1	2006	8,363	-	-	-	-	-	8,363
Year 2	2007	8,861	-	-	-	-	-	8,861
Year 3	2008	9,085	-	-	-	-	-	9,085
Year 4	2009	8,795	-	-	-	-	-	8,795
Year 5	2010	10,632	-	-	-	-	-	10,632
5 year baseline average gross water use								**9,147**

2015 Compliance Year - Gross Water Use							
2015	8,075	-	-	-	-	-	**8,075**
* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3							
NOTES:							

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Complete one table for each source.

Name of Source	Purchased water from West Basin (WBMWD)

This water source is:

☐	The supplier's own water source
☑	A purchased or imported source

Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment* *Optional* *(+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	2001	14,528		14,528
Year 2	2002	9,331		9,331
Year 3	2003	8,543		8,543
Year 4	2004	8,320		8,320
Year 5	2005	8,492		8,492
Year 6	2006	8,363		8,363
Year 7	2007	8,861		8,861
Year 8	2008	9,085		9,085
Year 9	2009	8,795		8,795
Year 10	2010	10,632		10,632
Year 11	0			-
Year 12	0			-
Year 13	0			-
Year 14	0			-
Year 15	0			-
5 Year Baseline - Water into Distribution System				
Year 1	2006	8,363		8,363
Year 2	2007	8,861		8,861
Year 3	2008	9,085		9,085
Year 4	2009	8,795		8,795
Year 5	2010	10,632		10,632
2015 Compliance Year - Water into Distribution System				
2015		8074.98		8,075

** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 4-A: Volume Entering the Distribution

Name of Source	Source 2

This water source is:

☐	The supplier's own water source
☐	A purchased or imported source

Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment* *Optional* *(+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	2,001			0
Year 2	2,002			0
Year 3	2,003			0
Year 4	2,004			0
Year 5	2,005			0
Year 6	2,006			0
Year 7	2,007			0
Year 8	2,008			0
Year 9	2,009			0
Year 10	2,010			0
Year 11	-			0
Year 12	-			0
Year 13	-			0
Year 14	-			0
Year 15	-			0
5 Year Baseline - Water into Distribution System				
Year 1	2,006			0
Year 2	2,007			0
Year 3	2,008			0
Year 4	2,009			0
Year 5	2,010			0
2015 Compliance Year - Water into Distribution System				
2015				0

** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 4-A: Volume Entering the Distribution

Name of Source Source 3

This water source is:

☐ The supplier's own water source

☐ A purchased or imported source

Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment* *Optional* *(+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	2,001			0
Year 2	2,002			0

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

Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Annual Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	2001	16,200	14,528	801
Year 2	2002	16,363	9,331	509
Year 3	2003	16,506	8,543	462
Year 4	2004	16,612	8,320	447
Year 5	2005	16,649	8,492	455
Year 6	2006	16,600	8,363	450
Year 7	2007	16,599	8,861	477
Year 8	2008	16,547	9,085	490
Year 9	2009	16,581	8,795	474
Year 10	2010	16,650	10,632	570
Year 11	0	-	-	
Year 12	0	-	-	
Year 13	0	-	-	
Year 14	0	-	-	
Year 15	0	-	-	
10-15 Year Average Baseline GPCD				**513**

5 Year Baseline GPCD

Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2006	16,600	8,363	450
Year 2	2007	16,599	8,861	477
Year 3	2008	16,547	9,085	490
Year 4	2009	16,581	8,795	474
Year 5	2010	16,650	10,632	570
5 Year Average Baseline GPCD				**492**

2015 Compliance Year GPCD			
2015	17,000	8,075	**424**

NOTES:

SB X7-7 Table 6: Gallons per Capita per Day

Summary From Table SB X7-7 Table 5

10-15 Year Baseline GPCD	513
5 Year Baseline GPCD	492
2015 Compliance Year GPCD	424

NOTES:

SB X7-7 Table 7: 2020 Target Method

Select Only One

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

NOTES:

SB X7-7 Table 7-A: Target Method 1

20% Reduction

10-15 Year Baseline GPCD	**2020 Target GPCD**
513	**411**

NOTES:

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target

5 Year Baseline GPCD *From SB X7-7 Table 5*	Maximum 2020 Target[1]	Calculated 2020 Target[2]	**Confirmed 2020 Target**
492	467	411	**411**

[1] Maximum 2020 Target is 95% of the 5 Year Baseline GPCD *[2] 2020 Target is calculated based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target.*

NOTES:

SB X7-7 Table 8: 2015 Interim Target GPCD

Confirmed 2020 Target *Fm SB X7-7 Table 7-F*	10-15 year Baseline GPCD *Fm SB X7-7 Table 5*	**2015 Interim Target GPCD**
411	513	**462**

NOTES:

SB X7-7 Table 9: 2015 Compliance

		Optional Adjustments *(in GPCD)*						
		Enter "0" if Adjustment Not Used						
Actual 2015 GPCD	2015 Interim Target GPCD	Extraordinary Events	Weather Normalization	Economic Adjustment	TOTAL Adjustments	Adjusted 2015 GPCD	2015 GPCD *(Adjusted if applicable)*	**Did Supplier Achieve Targeted Reduction for 2015?**
424	462	-	-	-	-	424	424	**YES**

NOTES: