California Water Service

2015 Urban Water Management Plan

Salinas District

June 2016

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List of Acronyms

AB	Assembly Bill
AF	Acre-Foot
AMI	Advanced Metering Infrastructure
AMR	Automatic Meter Reading
BCR	Benefit-Cost Ratio
BMP	Best Management Practice
CEHTP	California Environmental Health Tracking Program
CASGEM	California Statewide Groundwater Elevation Monitoring Program
CII	Commercial, Industrial, Institutional, water use sectors
CIMIS	California Irrigation Management Information System
CPUC	California Public Utilities Commission
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CWC	California Water Code
DMMs	Demand Management Measures
DOF	Department of Finance
DWR	Department of Water Resources
eARDWP	Electronic Annual Reports to the Drinking Water Program (SWRCB)
ETo	Reference Evapotranspiration
GIS	Geographic Information System
GPCD	Gallons per Capita per Day
IOU	Investor-Owned Utility
IRWM	Integrated Regional Water Management
LAFCO	Local Agency Formation Commission
MGD	Million Gallons Per Day
MOU	Memorandum of Understanding Regarding Urban Water Conservation
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PWS	Public Water System
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SB X7-7	Senate Bill Seven of the Senate's Seventh Extraordinary Session of 2009
SGMA	Sustainable Groundwater Management Act
SWP	State Water Project
SWRCB	State Water Resources Control Board
RUWMP	Regional Urban Water Management Plan
USBR	United States Bureau of Reclamation
UWMP	Urban Water Management Plan
WARN	Water/Wastewater Agency Response Network
WDR	Waste Discharge Requirement
WRR	Water Recycling Requirement
WSCP	Water Shortage Contingency Plan

Chapter 1
Introduction and Overview

This chapter discusses the importance and uses of this Urban Water Management Plan (UWMP), the relationship of this plan to the California Water Code (CWC), the relationship of this plan to other local and regional planning efforts, and how this plan is organized.

This chapter contains the following sections:

1.1 Background and Purpose

1.2 Urban Water Management Planning and the California Water Code

1.3 Relation to Other Planning Efforts

1.4 Plan Organization

1.1 Background and Purpose

California Water Service Company (Cal Water) is an investor-owned public utility supplying water service to 1.7 million Californians through 435,000 connections. Its 24 separate water systems serve 63 communities from Chico in the North to the Palos Verdes Peninsula in Southern California. California Water Service Group, Cal Water's parent company, is also serving water to communities in Washington, New Mexico and Hawaii. Rates and operations for districts located in California are regulated by the California Public Utilities Commission (CPUC). Rates are set separately for each of the systems. Cal Water incorporated in 1926 and has provided water service to communities served by the Salinas District since 1962, which include Buena Vista (Pine Canyon Estates), Country Meadows, Salinas, Salinas Hills, Indian Springs, Las Lomas, Oak Hills, and Foothill Estates.

The UWMP is a foundational document and source of information about Salinas District's historical and projected water demands, water supplies, supply reliability and vulnerabilities, water shortage contingency planning, and demand management programs. Among other things, it is used as:

- A long-range planning document by Cal Water for water supply and system planning
- Source data on population, housing, water demands, water supplies, and capital improvement projects used in
    - Regional water resource management plans prepared by wholesale water suppliers and other regional planning authorities,
    - General Plans prepared by cities and counties,

- Statewide and broad regional water resource plans prepared by the California Department of Water Resources (DWR), State Water Resources Control Board (State Board or Board), or other state agencies.

UWMPs are updated every five years. The last update was completed in 2010. This document is an update to the 2010 UWMP and carries forward information from that plan that remains current and is relevant to this plan. Although this plan is an update to the 2010 UWMP, it was developed to be a self-contained, stand-alone document and does not require readers to reference information contained in previous updates.

1.2 Urban Water Management Planning and the California Water Code

The UWMP Act requires urban water suppliers to prepare an UWMP every five years and to file this plan with the DWR, the California State Library, and any city or county within which the supplier provides water supplies. All urban water suppliers, 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 annually are required to prepare an UWMP (CWC §10617).

The UWMP Act was enacted in 1983. Over the years it has been amended in response to water resource challenges and planning imperatives confronting California. A significant amendment was made in 2009 as a result of the governor's call for a statewide 20 percent reduction in urban water use by 2020. Colloquially known as 20x2020, the Water Conservation Act of 2009 (also referred to as SB X7-7) required urban retail water suppliers to establish water use targets for 2015 and 2020 that would result in statewide water savings of 20 percent by 2020. Beginning in 2016, urban retail water suppliers are required to comply with the water conservation requirements in SB X7-7 in order to be eligible for state water grants or loans. Chapter 5 of this plan contains the data and calculations used to determine compliance with these requirements.

The UWMP Act contains numerous other requirements that an UWMP must satisfy. Appendix A to this plan lists each of these requirements and where in the plan they are addressed.

1.3 Relation to Other Planning Efforts

This plan provides information specific to water management and planning by the Salinas District. However, water management does not happen in isolation; there are other planning processes that integrate with the UWMP to accomplish urban planning. Some of these plans include city and county General Plans, Water Master Plans, Recycled Water Master Plans, Integrated Regional Water Management Plans, Groundwater Management Plans, and others.

This plan is informed by and helps to inform these other planning efforts. In particular, this plan utilizes information contained in city and county General Plans and local and regional water resource plans to the extent data from these plans is applicable and available.

1.4 Plan Organization

The organization of this Plan follows the same sequence as outlined in 2015 UWMP Guidebook.

Chapter 1 - Introduction and Overview

Chapter 2- Plan Preparation

Chapter 3 - System Description

Chapter 4 - System Water Use

Chapter 5- Baselines and Targets

Chapter 6 - System Supplies

Chapter 7— Water Supply Reliability

Chapter 8 – Water Shortage Contingency Planning

Chapter 9 — Demand Management Measures

Chapter 10 — Plan Adoption, Submittal, and Implementation

In addition to these ten chapters, this plan includes a number of appendices providing supporting documentation and supplemental information. Pursuant to CWC §10644(a)(2), this plan utilizes the standardized forms, tables, and displays developed by DWR for the reporting of water use and supply information required by the UWMP Act. This plan also includes other tables, figures, and maps, to augment the set developed by DWR. The plan notes if a table, figure, or map is part of DWR's standardized set or supplemental to it.

Chapter 2
Plan Preparation

This chapter discusses the type of UWMP Salinas District is preparing and includes information that will apply throughout the plan. Coordination and outreach during the development of the plan is also discussed.

This chapter includes the following sections:

2.1 Basis for Preparing a Plan

2.2 Regional Planning and Reporting

2.3 Units of Measure

2.4 Coordination and Outreach

2.1 Basis for Preparing a Plan

Per CWC §10617, Salinas District is an 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. It is therefore obligated under CWC §10621(d) to update and submit its 2015 UWMP to DWR by July 1, 2016.

Salinas District is an urban retail water supplier, as defined by CWC §10608.12. Salinas District does not provide water at wholesale.

Salinas District operates the Public Water Systems (PWS) listed in Table 2-1. Public Water Systems are the systems that provide drinking water for human consumption and these systems are regulated by the State Water Resources Control Board (Board), Division of Drinking Water. The Board requires that water agencies report water usage and other information via the electronic Annual Reports to the Drinking Water Program (eARDWP). The information provided in this UWMP is consistent with the data reported in the eARDWP. PWS data reported to the Board is used by the state to determine whether or not a retail supplier has reached the threshold (3,000 or more connections or 3,000 acre-feet of water supplied) for submitting an UWMP.

Table 2-1: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015 (AF)
2710010	Salinas	24,324	12,949
2710013	Las Lomas	610	246
2710019	Oak Hills	880	305
2710012	Salinas Hills	1,639	1,093
2701929	Country Meadows Mutual	107	65
	Total	**27,560**	**14,658**

2.2 Regional Planning

Regional planning can deliver mutually beneficial solutions to all agencies involved by reducing costs for the individual agency, assessing water resources at the appropriate geographic scale, and allowing for solutions that cross jurisdictional boundaries. Cal Water participates in regional water resources planning initiatives throughout California in the regions in which its 25 water districts are located. In the region in which the District operates, groundwater resources are managed by the Monterey County Water Resources Agency (MCWRA). MCWRA requires annual extraction reports from agricultural and municipal well operators, and has researched, developed and constructed projects to reduce seawater intrusion, manage nitrate contamination in the groundwater, provide adequate water supplies to meet current and future needs, and to balance the groundwater basin in the Salinas Valley. In 2006, MCWRA adopted the Monterey County Groundwater Management Plan. An Integrated Regional Water Management Plan for the Greater Monterey County region was completed and formally adopted in April 2013. The Greater Monterey County IRWM Plan supersedes and replaces the Salinas Valley IRWM Functionally Equivalent Plan, and meets all requirements established by Proposition 84 and Proposition 1E as specified in the Integrated Regional Water Management Grant Program Guidelines (DWR 2012). The Plan is intended to be a living document that will be updated and amended as needed to meet the changing conditions in the region.

2.3 Individual or Regional Planning and Compliance

Urban water suppliers may elect to prepare individual or regional UWMPs (CWC §10620(d)(1)). Salinas District is preparing an individual UWMP.

Urban retail water suppliers may report on the requirements of SB X7-7 (2009 California Conservation Act) individually or as a member of a "Regional Alliance." As described in Chapter 5, Salinas District is a member of a Regional Alliance and this UWMP provides information on the District's progress towards meeting its SB X7-7 water conservation targets both as an individual urban retail water supplier and as a member of a Regional Alliance.

Table 2-2: Plan Identification	
☑	Individual UWMP
☐	Regional UWMP
Notes: Salinas District is a member of a Regional Alliance. Chapter 5 provides information on the District's progress towards meeting its water conservation targets under SB X7-7 both as an individual urban retail water supplier and as a member of its Regional Alliance.	

2.4 Fiscal or Calendar Year and Units of Measure

Annual volumes of water reported in this UWMP are measured in acre-feet (AF) and are reported on a calendar year basis. Water use and planning data reported in this UWMP for calendar year 2015 cover the full twelve months of the year, as required by the UWMP Guidelines. Table 2-3 summarizes the units of measure used throughout this UWMP.

Table 2-3: Agency Identification	
Name of Agency	California Water Service: Salinas District
Select one or both	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year	
☑	UWMP Tables Are in Calendar Years
☐	UWMP Tables Are in Fiscal Years
Units of Measure	
☑	Acre Feet (AF)
☐	Million Gallons (MG)
☐	Hundred Cubic Feet (CCF)

2.5 Coordination and Outreach

Coordination with other water suppliers, cities, counties, and other community organizations in the region is an important part of preparing an UWMP (CWC §10620; CWC §10642). This section identifies the agencies and organizations Salinas District sought to coordinate with during preparation of this plan.

2.5.1 Wholesale and Retail Coordination

Urban retail water suppliers relying on one or more wholesalers for water supply are required to provide these wholesalers with information regarding projected water supply and demand. Salinas District does not derive any of its water supply from a wholesale water supplier.

Table 2-4: Retail: Water Supplier Information Exchange
Salinas District has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
Wholesale Water Supplier Name
The Salinas District does not receive water from wholesale water suppliers

2.5.2 Coordination with Other Agencies and the Community

Salinas District coordinated with cities, counties, and other community organizations during preparation of this UWMP. Cal Water provided notice to these entities and the communities it serves 60 days prior to the public hearing it held on May 26, 2016, to present the draft of the UWMP, address questions, and receive comments. Cities and counties receiving the public hearing notification from Salinas District as required per CWC §10621 (b) are listed in Table 10-1 in Chapter 10 of this plan.

Chapter 3
System Description

This chapter provides a description of Salinas District's water system and the service area, including climate, population, and demographics, to help in understanding various elements of water supply and demand.

This chapter includes the following sections:

3.1 Service Area General Description

3.2 Service Area Map(s)

3.3 Service Area Climate

3.4 Service Area Population and Demographics

3.1 Service Area General Description

The Salinas District is located in northern Monterey County approximately 15 miles northeast of the City of Monterey. The District serves about 70 percent of the residents of the City of Salinas and the residents of the unincorporated communities of Country Meadows, Bolsa Knolls, Las Lomas, Oak Hills, and Salinas Hills. The major transportation routes in the area are State Highway 101, State Routes 68, 183 and 156; the Southern Pacific Railroad also serves the area. The Salinas Municipal Airport is located in the southeast corner of the city. The general locations of the systems comprising the Salinas District are shown in Figure 3-1.

The Salinas District is in the northern section of the Central Coast hydrologic region and is within both the Pressure and Eastside sub-areas of the Salinas Valley groundwater basin. The most significant geological features in the area are two strike-slip faults: the San Andreas Fault lies 13 miles to the east and the Rinconada Fault that lies five miles to the west of the District. A major earthquake on either fault has the potential to disrupt water service in the District.

The Salinas and Bolsa Knolls systems are linked hydraulically while all of the other systems are small isolated systems. For the purposes of this planning study all data on demand and services have been combined into a consolidated value and reported as a single unit. Salinas is surrounded by large parcels of land. Portions of this land have been developed for agricultural functions. This land could be developed for residential, commercial, or industrial uses if required for urban expansion; thus the potential for growth in the area is substantial.

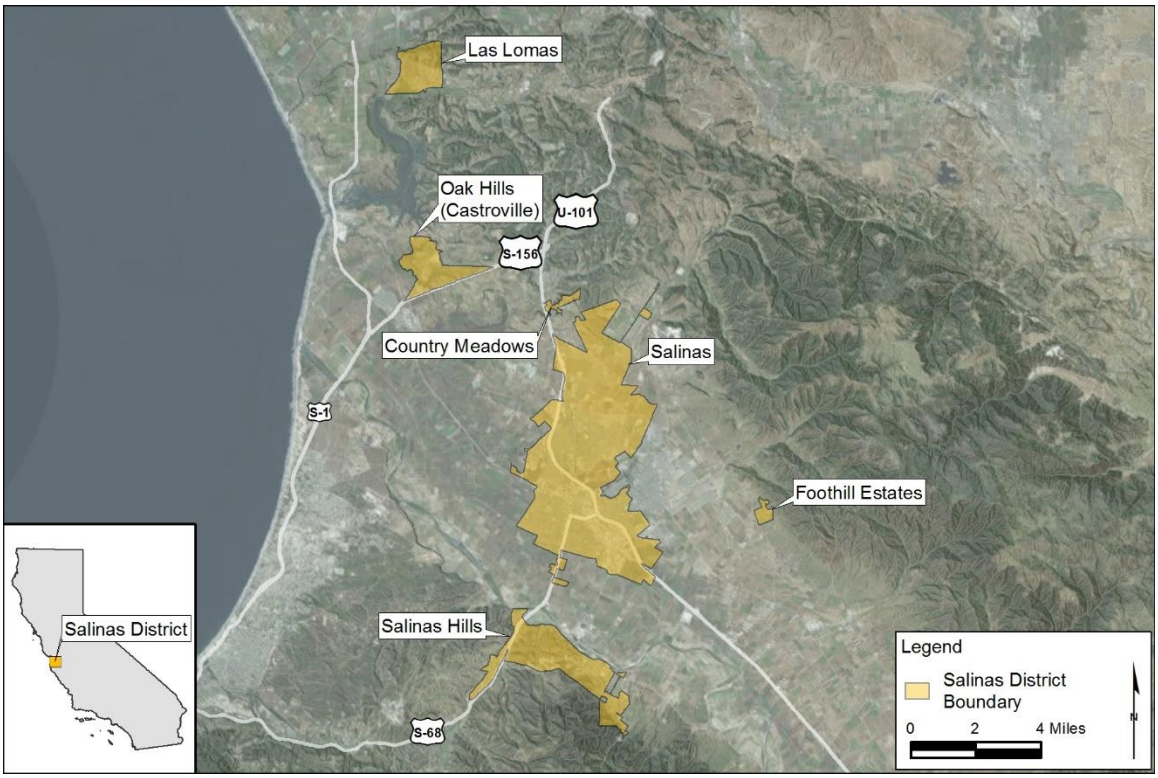
Cal Water has provided water utility services to the Salinas area since 1962. Water served by the District comes from local groundwater. Across the six service areas that comprise the District, Cal Water operates 36 wells, 22 booster pumps, 30 storage tanks, and more than 300 miles of pipeline. Over the last five years, the District delivered an average of 16 million gallons of water per day to more than 27,000 service connections.

Figure 3-1. General Location of Salinas District Service Areas

3.2 Service Area Maps

A detailed service area map is provided in Appendix E. Figure 3-2 shows the District's service area boundaries.

Figure 3-2. Service Area Boundaries



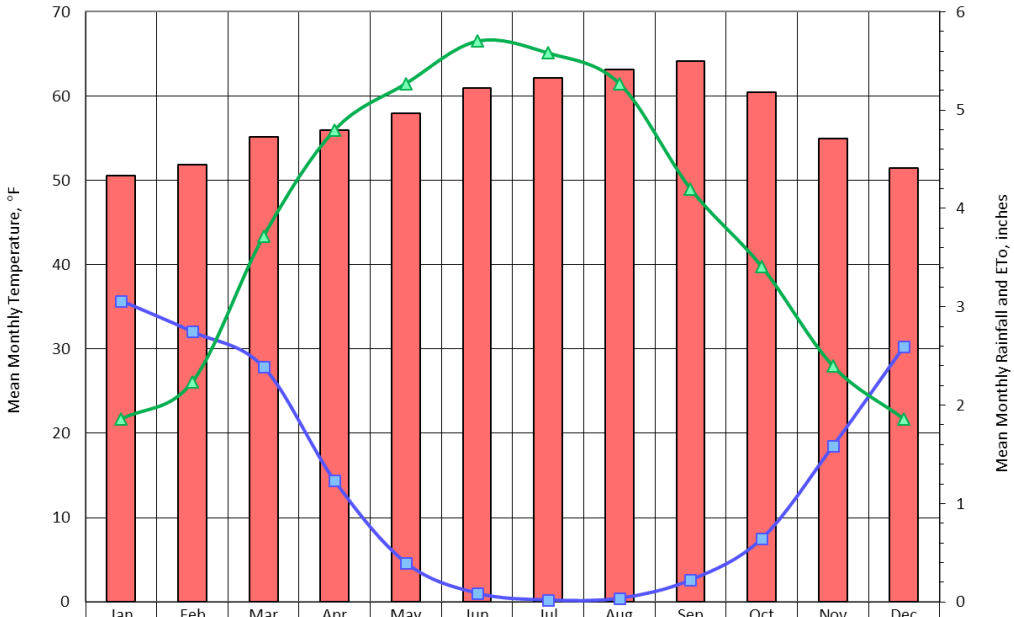
3.3 Service Area Climate

The climate for the Salinas District is moderate with warm dry summers and cool winters. The majority of precipitation falls during late autumn, winter, and spring. Figure 3-3 displays monthly averages for rainfall, reference evapotranspiration (ETo), and daily air temperature. Additional climate data is provided in Appendix F, worksheet 13. Rainfall and temperature data are obtained from the PRISM Climate Group.[1] ETo values are from the California Irrigation Management Information System (CIMIS).[2]

On average, the District receives 15 inches of rainfall, annually. ETo averages 53 inches, annually. Annual rainfall is 28 percent of ETo, on average. Nearly all irrigation requirements during the summer months are met with District water sources due to the lack of rainfall in the region. Annual rainfall in Salinas District also is highly variable, as shown in Figure 3-4, and has been below average in six of the last ten years. Calendar year 2013 was the driest year on record, receiving just 24 percent of average rainfall.

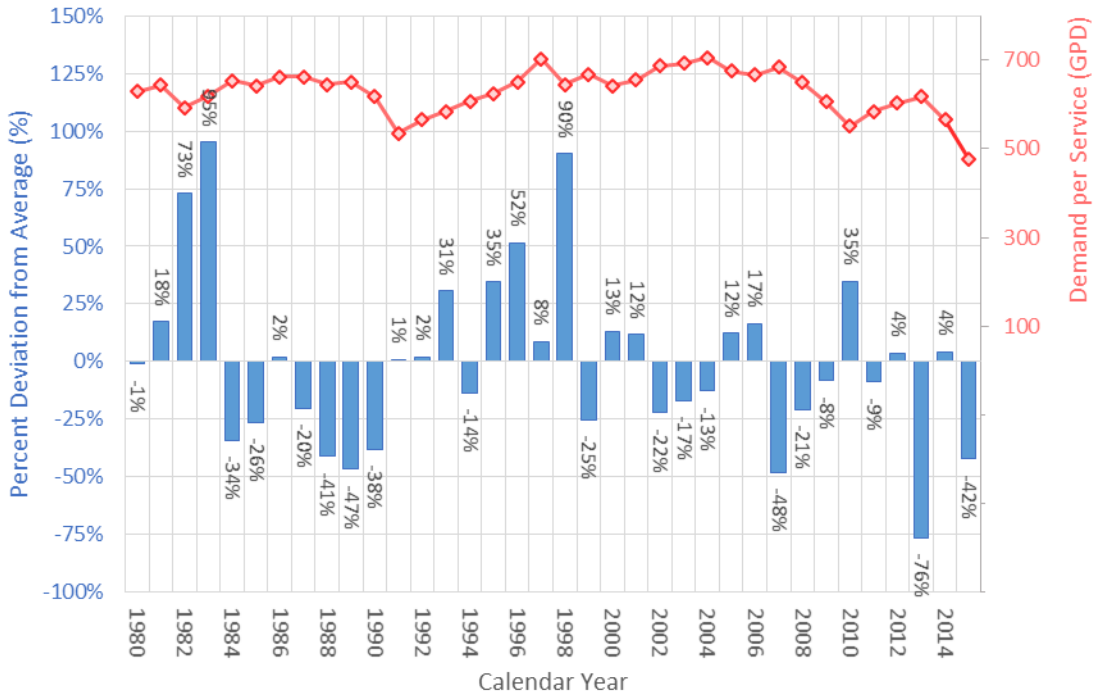
[1] www.prism.oregonstate.edu.
[2] CIMIS Zones Map, Zone 3.

Figure 3-3. Average Monthly Temperature, Rainfall, and ETo



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Temp	51	52	55	56	58	61	62	63	64	60	55	52
Avg. Rainfall	3.1	2.7	2.4	1.2	0.4	0.1	0.0	0.0	0.2	0.6	1.6	2.6
Monthly Average Eto	1.9	2.2	3.7	4.8	5.3	5.7	5.6	5.3	4.2	3.4	2.4	1.9

Figure 3-4. Annual Rainfall Deviation from Average



3.3.1 Climate Change

Potential impacts of climate change on District water demands and supplies are discussed in Chapters 4 (System Water Use), 6 (System Supplies), and 7 (Water Supply Reliability Assessment). Here it is noted that climate change is expected to bring higher average temperatures and greater variability in weather, with the potential for more frequent and deeper droughts.

The National Climatic Data Center (NCDC) has established 11 climate regions within California. Each region is defined by unique characteristics, and is shown in Figure 3-5. The Salinas District is located in the Central Coast Region (region F on the map). The Central Coast Region has experienced a general warming trend in the last several decades, as shown in Figure 3-6. Since 1895, maximum and minimum temperatures have increased at a rate of 1.24 °F and 2.23 °F per 100 years, respectively. More recently, since 1975, maximum and minimum temperatures have increased at a rate of 1.46 °F and 3.76 °F per 100 years, respectively.

Figure 3-5. Climate Regions of California

A. North Coast Region
B. North Central Region
C. Northeast Region
D. Sierra Region
E. Sacramento-Delta Region
F. Central Coast Region
G. San Joaquin Valley Region
H. South Coast Region
I. South Interior Region
J. Mojave Desert Region
K. Sonoran Desert Region

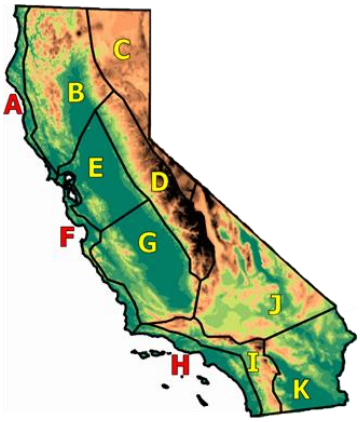
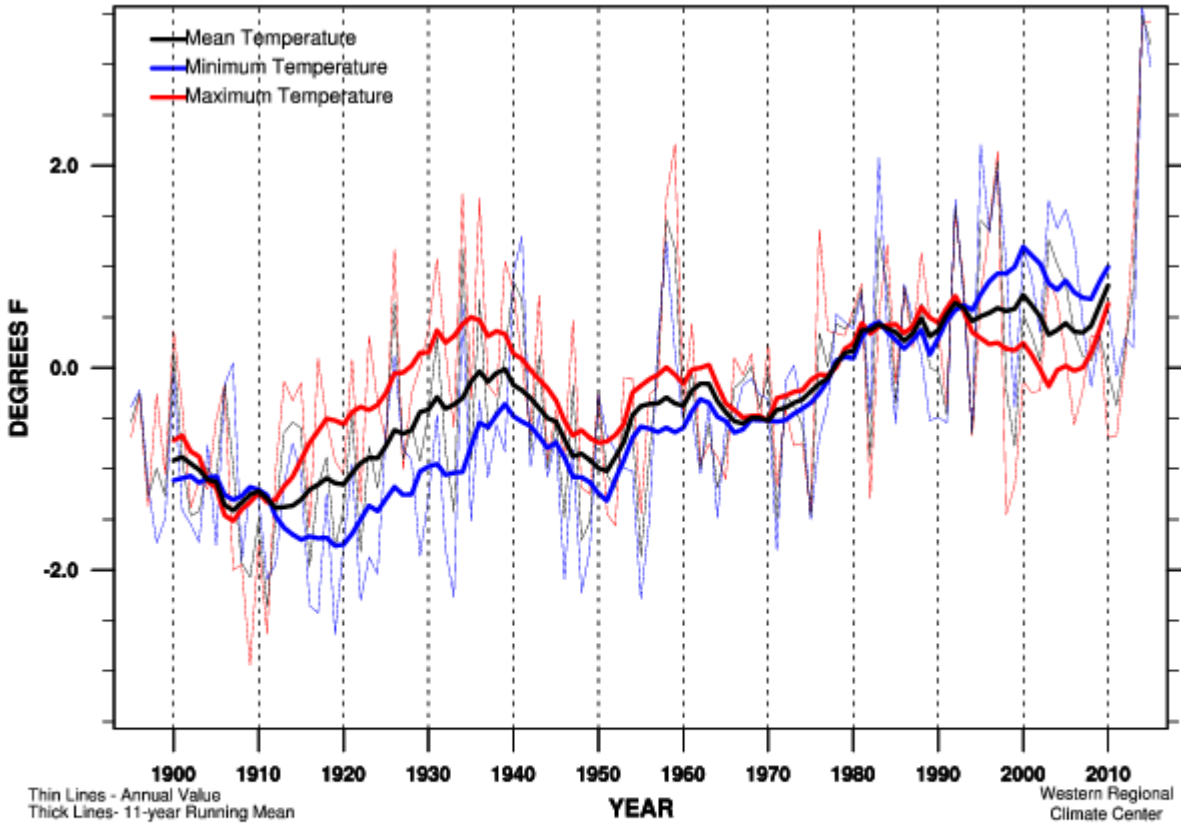


Figure 3-6. Temperature Departure, Central Coast Region



	Maximum Temperature	Minimum Temperature
Linear Trend 1895-present	+ 1.24 (± 0.50) °F/100yr	+ 2.23 (± 0.46) °F/100yr
Linear Trend 1949-present	+ 2.01 (± 1.28) °F/100yr	+ 3.60 (± 1.09) °F/100yr
Linear Trend 1975-present	+ 1.46 (± 2.87) °F/100yr	+ 3.76 (± 2.55) °F/100yr

3.4 Service Area Population and Demographics

Cal Water estimates the service area population was 121,203 in 2015. Service area population has remained largely unchanged for the past 15 years. Between the 2000 and 2010 Censuses, growth was slightly negative, decreasing at an annual rate of 0.25 percent. Between 2010 and 2015, growth turned positive, increasing at an average annual rate of 0.65 percent. Going forward, service area population is projected to increase at a rate of 1.04 percent annually through the 2040 planning horizon. This is based on California Department of Finance County Projections and the Caltrans Monterey County Economic Forecast.

To estimate current service area population, Cal Water uses MARPLOT and LandView 5 software to intersect District service area boundaries with Census Blocks from the 2000 and 2010 Censuses. This yields estimates of the number of housing units and population within each Census Block in the District for 2000 and 2010. From these data, Cal Water estimates the total population and the average number of persons per housing unit in the District. Cal Water applies the average number of persons per housing unit to the number of housing units served to calculate service area population in non-Census years.

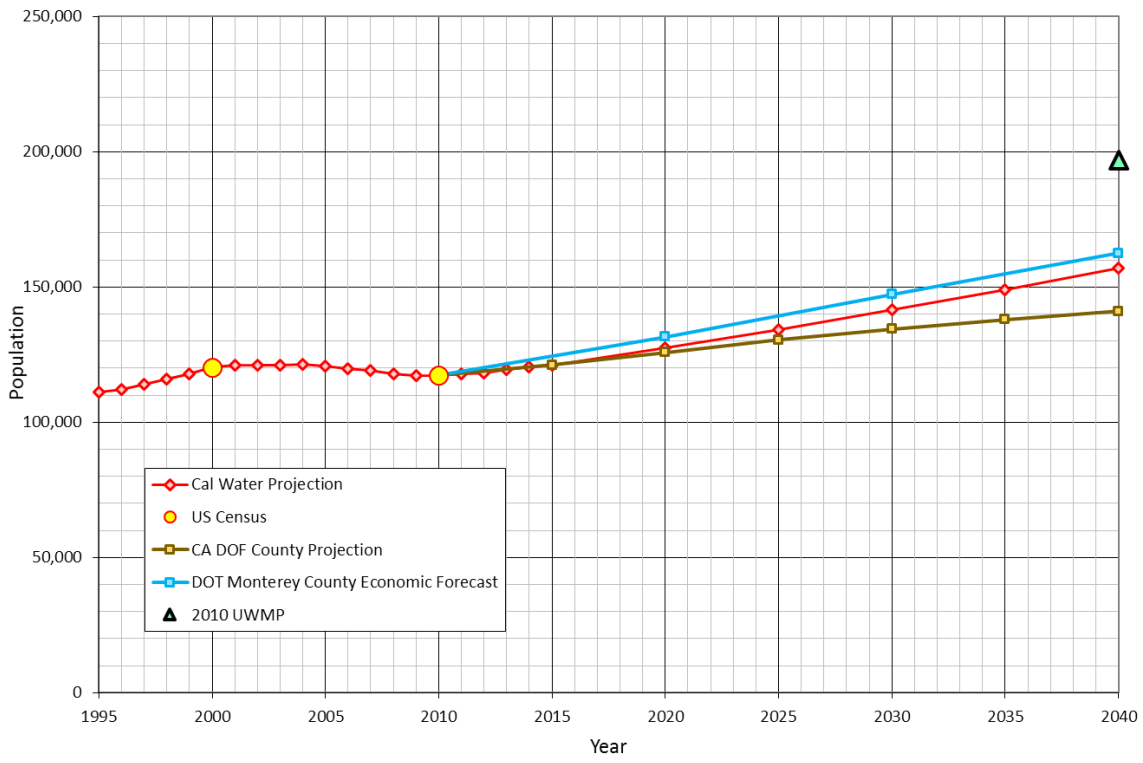
Between the 2000 and 2010 Censuses, the average number of persons per household decreased from 3.43 to 3.16. The projection of future population is based on this lower housing unit density. Projected service area population is given in Table 3-1.

Table 3-1: Population - Current and Projected

	2015	2020	2025	2030	2035	2040
Population Served	121,203	127,596	134,343	141,463	148,977	156,908

Cal Water's current population projection for Salinas District is compared in Figure 3-7 to the projection made in its 2010 UWMP. The higher 2010 UWMP forecast assumed greater housing unit density and growth in residential service connections than the current forecast. Figure 3.7 also compares these Cal Water projections to forecasts based on countywide population growth rate projections in California Department of Transportation's (DOT) Monterey County Economic Forecast and Department of Finance's Monterey County Population Forecast. Cal Water's population forecast falls between these two forecasts.

Figure 3-7. Population Projection Comparison



Chapter 4
System Water Use

This chapter provides a description and quantifies the Salinas District's current water use and the projected uses through the year 2040. For purposes of the UWMP, the terms "water use" and "water demand" are used interchangeably.

This chapter is divided into the following subsections:

4.1 Recycled vs Potable and Raw Water Demand

4.2 Water Uses by Sector

4.3 Distribution System Water Losses

4.4 Estimating Future Water Savings

4.5 Water Use for Lower Income Households

4.6 Climate Change

4.1 Recycled versus Potable and Raw Water Demand

This plan maintains a clear distinction between recycled, potable, and raw water uses and supplies. Recycled water is addressed comprehensively in Chapter 6, but a summary of recycled water demand is included in Table 4-3 of this chapter. The primary focus of this chapter is historical and projected potable and raw water uses in the district.

4.2 Water Uses by Sector

4.2.1 Historical Potable and Raw Water Uses

Actual water use in 2015 by customer category is shown in Table 4-1. Total system demand in 2015 was 14,659 AF. District water use in 2015 was strongly affected by the Drought Emergency Regulation adopted by the State Water Resources Control Board in May of 2015 (SWRCB Resolution No. 2015-0032). Among other things, the Drought Emergency Regulation mandated urban retail water suppliers reduce potable water use between June of 2015 and February of 2016 by percentage amounts specified by the State Water Resources Control Board. The Salinas District was ordered to reduce potable water use by 16 percent over this period relative to use over the same period in 2013. Between June and December 2015, water use in Salinas was 25.5 percent less than water use over the same period in 2013.

Table 4-1: Retail: Demands for Potable and Raw Water - Actual		
Use Type	2015 Actual	
	Level of Treatment When Delivered	Volume (AF)
Single Family	Drinking Water	6,549
Multi-Family	Drinking Water	1,373
Commercial	Drinking Water	4,268
Industrial	Drinking Water	1,380
Institutional/Governmental	Drinking Water	811
Other	Drinking Water	27
Landscape	Drinking Water	2
Losses	Drinking Water	247
	Total	**14,659**

Residential customers account for approximately 88 percent of services and 52 percent of water use in the District, most of which is associated with single-family water use. Figure 4-1 shows the distribution of services in 2015. Figure 4-2 shows historical water sales by customer category.

Figure 4-1. Distribution of Services in 2015

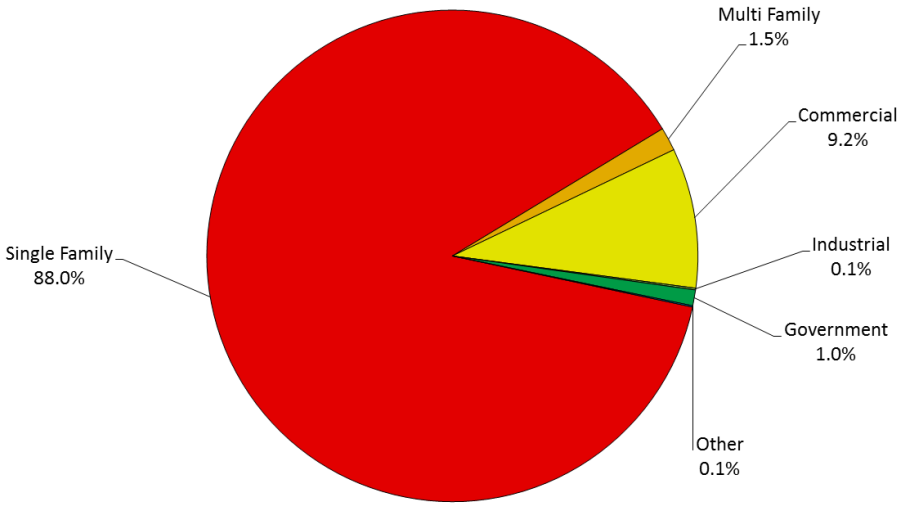
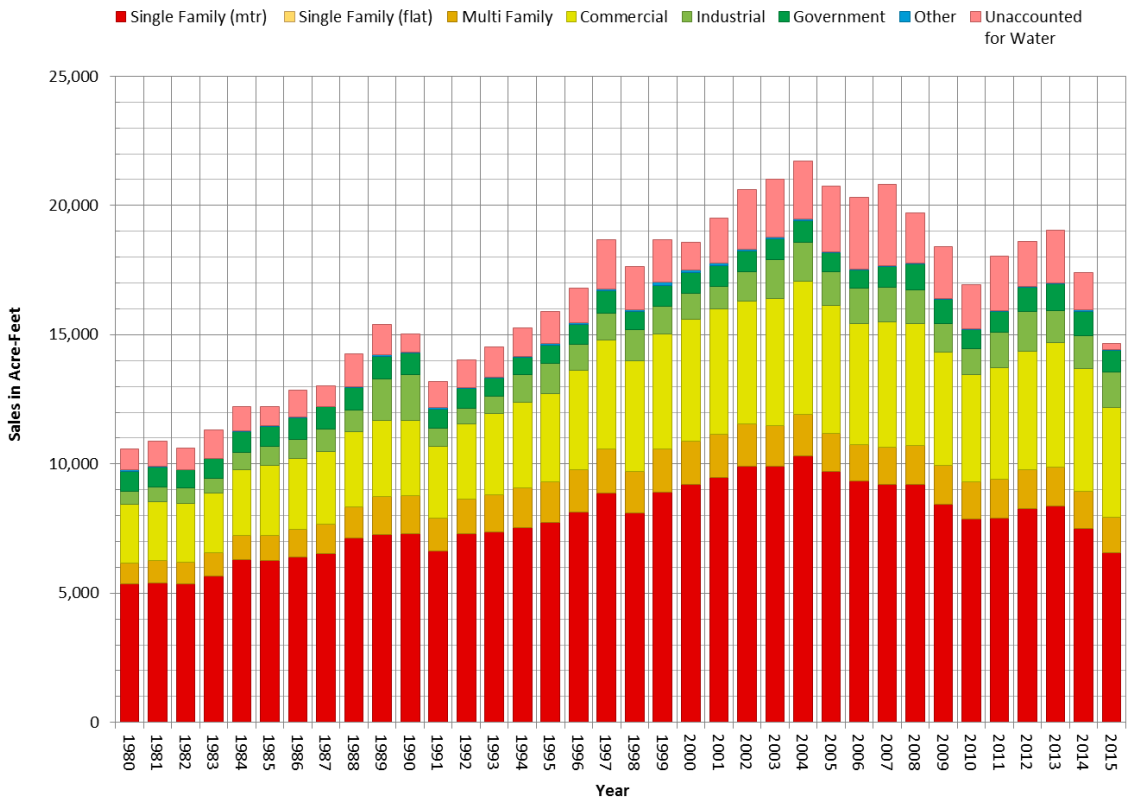


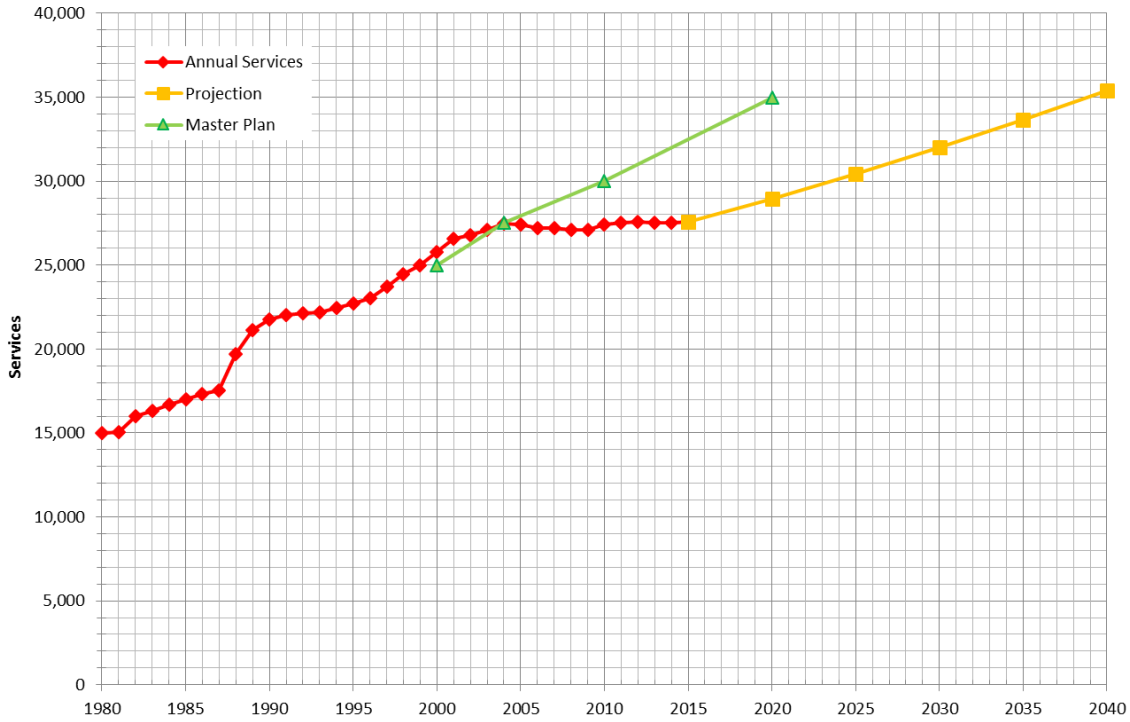
Figure 4-2. Historical Sales by Customer Category



4.2.2 Projected Potable and Raw Water Uses

Projected water demands by customer category through 2040 are shown in Tables 4-2. Future demands are estimated as the product of future services and expected water use per service. Future services are based primarily on projected growth in the City of Salinas. The parts of the District outside city limits are not expected to experience significant service growth over the forecast period. The projected average annual growth rate in services across all customer categories is approximately one percent. Historical and projected services are shown in Figure 4-3. Also shown in the figure is the services projection from Cal Water's 2009 Water Supply and Facility Master Plan.

Figure 4-3. Historical and Projected Services



Expected water use per service, shown in Figure 4-4, is based on weather-normalized historical use, adjusted for future expected water savings from plumbing codes and District conservation programs. Weather normalization of historical use was done econometrically using the California Urban Water Conservation Council GPCD Weather Normalization Methodology. Expected water savings from plumbing codes are presented in Section 4.4. Expected water savings from District conservation programs and projected compliance with the District's SB X7-7 2020 per capita water use target are discussed in Chapter 9. The projected trend in average use per service shown in Figure 4-4 does not account for possible effects of climate change on future demand. The potential effects of climate change on demand are discussed in Section 4.6.

Projected water uses in Table 4-2 and Figure 4-4 are predicated on unrestricted demands under normal weather conditions. Demands are assumed to partially rebound by 2020 from 2015 levels on the assumption that the State Water Resources Control Board's mandatory water use reductions end by October 2016, as currently scheduled. The difference between actual and projected demands in 2020 will critically depend on the accuracy of this assumption. If the Emergency Drought Regulations are continued beyond October 2016, then the likelihood of actual demands being less than projected demands in 2020 would be significantly increased.

Figure 4-4. Historical and Projected Average Use per Service in Gallons per Day

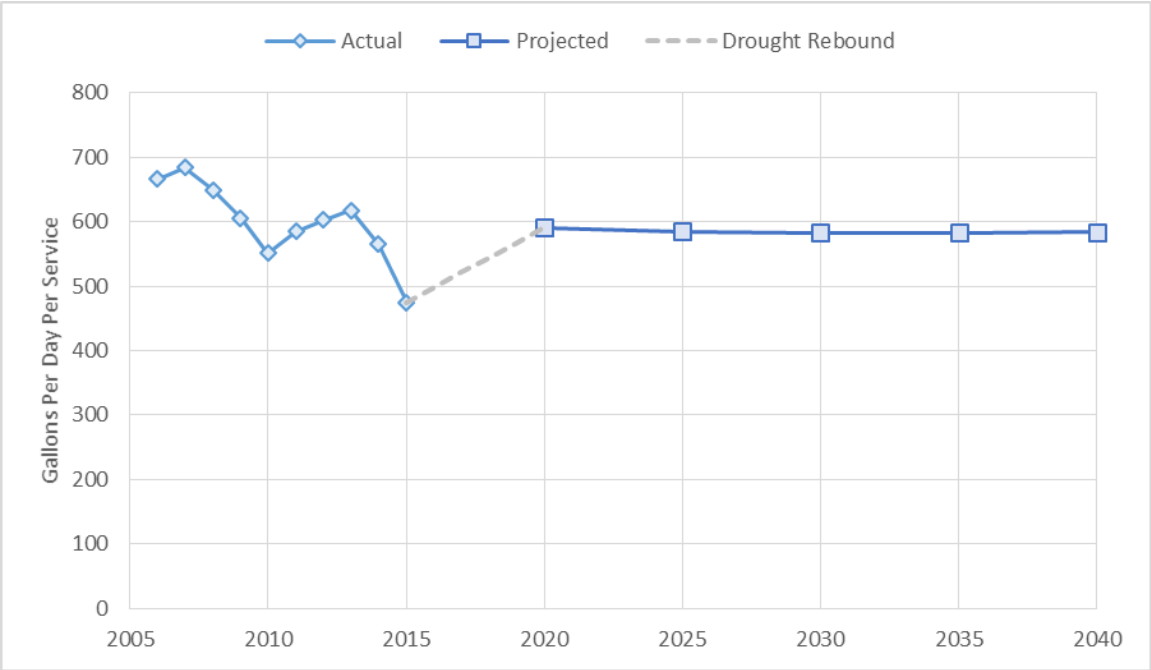


Table 4-2: Retail: Demands for Potable and Raw Water - Projected					
Use Type	Projected Water Use (AF)				
	2020	2025	2030	2035	2040
Single Family	8,861	9,148	9,515	9,925	10,383
Multi-Family	1,731	1,720	1,743	1,780	1,832
Commercial	4,640	4,826	5,057	5,289	5,539
Industrial	1,118	1,296	1,503	1,742	2,019
Institutional/Governmental	1,012	1,051	1,093	1,138	1,187
Other	29	29	29	29	29
Losses	1,789	1,876	1,967	2,064	2,165
Total	**19,180**	**19,946**	**20,906**	**21,967**	**23,154**

4.2.3 Total Water Demand Including Recycled Water

Total water demands, including recycled water uses, are shown in Table 4-3. Current and projected recycled water use is discussed in Chapter 6, Section 6.5.

Table 4-3: Retail: Total Water Demands						
	2015	2020	2025	2030	2035	2040
Potable and Raw Water *From Tables 4-1 and 4-2*	14,659	19,180	19,946	20,906	21,967	23,154
Recycled Water Demand *From Table 6-4*	0	0	0	0	0	0
Total Water Demand	**14,659**	**19,180**	**19,946**	**20,906**	**21,967**	**23,154**

4.3 Distribution System Water Losses

For the 2015 UWMP, urban retail water suppliers are required to quantify distribution system water losses for the most recent 12-month period available. For the Salinas District, this period is January 1 to December 31 2014. System water loss was calculated using the DWR Water Audit Method, as described in Appendix L of the UWMP Guidelines. Distribution system water loss is reported in Table 4-4. The DWR Water Audit Method calculates two types of water losses: (1) apparent losses and (2) real losses. Apparent losses include unauthorized consumption, metering errors, and data errors. Apparent losses represent unauthorized or unrecorded water delivered to customers. Real losses include distribution system discharges, spills, and leaks of water. Real losses represent a physical loss of water to the system. Table 4-4 reports combined apparent and real distribution system water loss. A copy of the completed water balance worksheet for the Salinas District is provided in Appendix M. Actions the Salinas District is taking to reduce real and apparent distribution system water losses are discussed in Chapter 9.

Table 4-4: Retail: Water Loss Summary Most Recent 12 Month Period Available	
Reporting Period Start Date	Volume of Water Loss*
01/2014	1,065
*Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.	

4.4 Estimating Future Water Savings

The projections of future water use in Table 4-2 incorporate expected water savings from plumbing codes and appliance standards for residential and commercial toilets, urinals, clothes washers, dishwashers, and showerheads. These savings are commonly referred to as *passive water savings* to differentiate them from water savings resulting from water supplier conservation programs, which are termed *active water savings*. Active water savings resulting from the Salinas District's implementation of demand management measures are discussed in Chapter 9 of this plan. The estimates of passive water savings

presented in this chapter were developed with the Alliance for Water Efficiency's *Water Conservation Tracking Tool* using data on the vintage, number, and water using characteristics of residences and businesses within Salinas District's service area.

Confirmation that the water use projections contained in this plan incorporate projected future water savings from plumbing codes and appliance standards is provided in Table 4-5. The estimated volume of future water savings from plumbing codes and standards is summarized in Table 4-6.

Table 4-5: Retail Only: Inclusion in Water Use Projections	
Future Water Savings Included Y/N	Yes
If "Yes" to above, state the section or page number where citations of the codes, ordinances, etc… utilized in demand projections are found.	Location in UWMP: Section 4.4 of Chapter 4
Lower Income Residential Demands Included	Yes

Table 4-6: Retail Only: Future Passive Savings						
	2015	2020	2025	2030	2035	2040
Passive Savings (AF)	18	329	587	801	980	1,132

The following codes and standards form the basis for the estimated volume of future passive water savings:

- AB 715, enacted in 2007, requires that any toilet or urinal sold or installed in California on or after January 1, 2014 cannot have a flush rating exceeding 1.28 and 0.5 gallons per flush, respectively. AB 715 superseded the state's previous standards for toilet and urinal water use set in 1991 of 1.6 and 1.0 gallons per flush, respectively. On April 8, 2015, in response to the Governor's Emergency Drought Response Executive Order (EO B-29-15), the California Energy Commission approved new standards for urinals requiring that they not consume more than 0.125 gallons per flush, 75% less than the standard set by AB 715.

- Water use standards for residential and commercial clothes washers and dishwashers are established by the U.S. Department of Energy through its authority under the federal Energy Policy and Conservation Act. Water use efficiency is summarized by the water factor for the appliance which measures the gallons of water used per cycle per

cubic foot of capacity. A typical top-loading residential clothes washer manufactured in the 1990s had a water factor of around 12. In 2015, the allowable water factor for top- and front-loading residential clothes was reduced to 8.4 and 4.7, respectively. In 2018, water factor standard for top-loading residential clothes washers will be reduced to 6.5. In 2010 the allowable water factor for top- and front-loading commercial clothes washers was reduced to 8.5 and 5.5, respectively. The maximum water factor for Energy Star compliant top- and front-loading washers is 3.7 and 4.3, respectively. EPA estimates that Energy Star washers comprised at least 60 percent of the residential market and 30 percent of the commercial market in 2011.[3] An Energy Star compliant washer uses about two-thirds less water per cycle than washers manufactured in the 1990s. Federal dishwasher water use efficiency standards were last updated in 2013. The maximum water use for standard and compact sized dishwashers is 5.0 and 3.5 gallons per cycle, respectively.

- New construction and renovations in California are now subject to CalGreen Code requirements. CalGreen includes prescriptive indoor provisions for maximum water consumption of plumbing fixtures and fittings in new and renovated properties. CalGreen also allows for an optional performance path to compliance, which requires an overall aggregate 20% reduction in indoor water use from a calculated baseline using a set of worksheets provided with the CalGreen guidelines.

- SB 407, enacted in 2009, mandates that all buildings in California come up to current State plumbing fixture standards within this decade. This law establishes requirements that residential and commercial property built and available for use on or before January 1, 1994 replace plumbing fixtures that are not water conserving, defined as "noncompliant plumbing fixtures" as follows:
    - any toilet manufactured to use more than 1.6 gallons of water per flush;
    - any urinal manufactured to use more than one gallon of water per flush;
    - any showerhead manufactured to have a flow capacity of more than 2.5 gallons of water per minute; and
    - any interior faucet that emits more than 2.2 gallons of water per minute.

  For single-family residential property, the compliance date is January 1, 2017. For multi-family and commercial property, it is January 1, 2019. In advance of these dates, the law requires effective January 1, 2014 for building alterations and improvements to all residential and commercial property that water-conserving plumbing fixtures replace all noncompliant plumbing fixtures as a condition for issuance of a certificate of final completion and occupancy or final permit approval by the local building department.

[3] EPA Energy Star Unit Shipment and Market Penetration Report Calendar Year 2011 Summary.

SB 407 also requires effective January 1, 2017 that a seller or transferor of single-family residential property disclose to the purchaser or transferee, in writing, the specified requirements for replacing plumbing fixtures and whether the real property includes noncompliant plumbing. Similar disclosure requirements go into effect for multi-family and commercial transactions January 1, 2019. SB 837, passed in 2011, reinforces the disclosure requirement by amending the statutorily required transfer disclosure statement to include disclosure about whether the property is in compliance with SB 407 requirements. If enforced, these two laws will require retrofit of non-compliant plumbing fixtures upon resale or major remodeling for single-family residential properties effective January 1, 2017 and for multi-family and commercial properties effective January 1, 2019.

California has also adopted regulations governing the future use of landscape water use.

- The California Water Commission approved the State's updated Model Water Efficient Landscape Ordinance (MWELO) on July 15, 2015. The updated MWELO supersedes the State's MWELO developed pursuant to AB 1881. Local agencies have until December 1, 2015 to adopt the MWELO or to adopt a Local Ordinance which must be at least as effective in conserving water as MWELO. Local agencies working together to develop a Regional Ordinance have until February 1, 2016 to adopt. The size of landscapes subject to MWELO has been lowered from 2500 sq. ft. to 500 sq. ft. The size threshold applies to residential, commercial, industrial and institutional projects that require a permit, plan check or design review. Additionally, the maximum applied water allowance (MAWA) has been lowered from 70% of the reference evapotranspiration (ETo) to 55% for residential landscape projects, and to 45% of ETo for non-residential projects. This water allowance reduces the landscape area that can be planted with high water use plants such as cool season turf. For typical residential projects, the reduction in the MAWA reduces the percentage of landscape area that can be planted to high water use plants from 33% to 25%. In typical non-residential landscapes, the reduction in MAWA limits the planting of high water use plants to special landscape areas. The revised MWELO allows the irrigation efficiency to be entered for each area of the landscape. The site-wide irrigation efficiency of the previous ordinance (2010) was 0.71; for the purposes of estimating total water use, the revised MWELO defines the irrigation efficiency (IE) of drip irrigation as 0.81 and overhead irrigation and other technologies must meet a minimum IE of 0.75.

- CalGreen requires that automatic irrigation system controllers for new landscaping provided by a builder and installed at the time of final inspection must be weather- or soil moisture-based controllers that automatically adjust irrigation in response to changes in plant water needs as weather or soil conditions change.

The estimates of future water savings in Table 4-6 do not include potential landscape water savings from implementation of MWELO or CalGreen because estimating these savings required data that was not available to the District at the time this plan was prepared, including data on existing and future landscape areas, plant materials, irrigation equipment, and probable enforcement of and compliance with the landscape design and irrigation equipment requirements.

4.5 Water Use for Lower Income Households

California Senate Bill No. 1087 (SB 1087), Chapter 727, was passed in 2005 and amended Government Code Section 65589.7 and Water Code Section 10631.1. SB 1087 requires local governments to provide a copy of their adopted housing element to water and sewer providers. In addition, it requires water providers to grant priority for service allocations to proposed developments that include housing units for lower income families and workers. Subsequent revisions to the UWMP Act require water providers to develop water demand projections for lower income single and multi-family households.

Cal Water does not maintain records of the income level of its customers and does not discriminate in terms of supplying water to any development. Cal Water is required to serve any development that occurs within its service area, regardless of the income level of the future residents. It is ultimately the City's or County's responsibility to approve or not approve developments within the service area.

As a benefit to its customers, Cal Water offers a Low Income Rate Assistance Program (LIRA) in all of its service districts. Under the LIRA Program lower income customers that qualify are able to receive a discount on their monthly bills.

For the purposes of estimating projected demand of lower income households, Cal Water used the City of Salinas's General Plan Housing Element to estimate the percentage of households in the service area that qualify as lower income.[4] Based on these data, 47 percent of total households are classified as lower income. Lower income households are defined as households with income that is less than or equal to 80 percent of the median income for the area. Projected residential water demand for lower income households is shown in Table 4-7. These demands are incorporated into the service area demand projection given in Table 4-2.

[4] City of Salinas Public Review Draft 2015-2023 Housing Element, Table 15. Accessed from http://www.ci.salinas.ca.us/pdf/temporary/Public%20Review%20Draft%20Salinas%20HE%20June%202015.pdf

Table 4-7. Residential Demand of Lower Income Households						
	2015 (actual)	2020	2025	2030	2035	2040
Demand (AF)	3,755	5,021	5,152	5,336	5,548	5,790

4.6 Climate Change

A hotter and dryer climate is expected to increase demand for outdoor water use. Cal Water has econometrically estimated the sensitivity of class-level water demand to deviations in precipitation and temperature from their long-term averages using historical data on monthly water sales and weather for the District.[5] The weather effect is measured as predicted sales conditional on observed weather versus predicted sales conditional on long-term average weather. The predicted weather effect is then summed on an annual basis and expressed as a percentage of annual weather-normalized sales. An estimate of the variance in annual water sales caused by departures in precipitation and temperature from their long term averages was developed for each customer class. The variance estimates of class-level water sales were weighted and summed across classes for an aggregate district-level estimate of the standard deviation of water demand induced by variation in precipitation and temperature. The standard deviation in District demand due to weather variability is 3.4 percent. The maximum deviation, based on historical weather data, is 5.5 percent.

A selection of climate change scenarios for 2040 for the Southwest United States contained in the Regional Climate Trends and Scenarios for the U.S. National Climate Assessment, Part 5, is shown in Table 4-8, along with the expected effect on District water demand.[6] Based on the scenarios in the table, temperature increases by 2040 associated with climate change imply a 2 to 3 percent increase in demand relative to weather-normalized demand. This expected effect is solely due to predicted changes in temperature. While the climate change scenarios also include predicted changes in the pattern and amount of precipitation, this has not been included in Cal Water's demand modeling at this time due to the large uncertainty associated with these estimates.[7]

The predicted effect of climate change on demand is based on current patterns of outdoor water use. It does not account for changes households and businesses may make in the

[5] A&N Technical Services, Inc., Cal Water Long Term Water Demand Forecast Model, December 2014.
[6] Kunkel, K.E, L.E. Stevens, S.E. Stevens, L. Sun, E. Janssen, D. Wuebbles, K.T. Redmond, and J.G. Dobson, 2013: Regional Climate Trends and Scenarios for the U.S. National Climate Assessment. Part 5. Climate of the Southwest U.S., NOAA Technical Report NESDIS 142-5.
[7] Ibid. A discussion and depiction of the uncertainty around the precipitation forecasts is found on pages 55-56, Table 7, and Figure 27 of the cited report.

way they use water in the future given a warming climate. For example, social norms and economic incentives regarding the type and extent of residential and non-residential landscaping may change over time which could lead to outdoor water use having a lower share of total demand compared to what is currently observed. In this case, the predicted effect of climate change would be offset to some extent by changes in the way households and businesses use water.

Table 4-8. Climate Change Effect on Demand

Climate Scenario	Year 2040 degree C	Year 2040 degree F	% Change from mean Temperature	Effect on Demand
B1	1.4	2.5	3.4%	2.0%
A1B	1.6	2.9	3.9%	2.3%
A2	1.5	2.7	3.7%	2.1%
80%ile	2.0	3.6	4.9%	2.8%

Chapter 5
Baselines and Targets

With the adoption of the Water Conservation Act of 2009, also known as SB X7-7, the state is required to reduce urban water use by 20 percent by the year 2020. Each urban retail water supplier must determine baseline per capita water use during their baseline period and also target water use for the years 2015 and 2020 in order to help the state achieve the 20 percent reduction.

SB X7-7 defines an urban retail water supplier as "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." (CWC 10608.12) As shown in Chapter 2, the Salinas District exceeds both thresholds.

In this Chapter, the Salinas District demonstrates compliance with its per capita water use target for the year 2015. This will also demonstrate whether or not the District is currently on track to achieve its 2020 target. Compliance will be verified by DWR's review of the SB X7-7 Verification Tables submitted with this plan. These tables are included with this plan in Appendix I.

This chapter includes the following sections:

5.1 Wholesale Agencies

5.2 Updating Calculations from 2010 UWMP

5.3 Baseline Periods

5.4 Service Area Population

5.5 Gross Water Use

5.6 Baseline Daily per Capita Water Use

5.7 2015 and 2020 Targets

5.8 2015 Compliance Daily per Capita Water Use

5.9 Regional Alliance

5.1 Wholesale Agencies

Wholesale water suppliers are not required to establish and meet baseline and targets for daily per capita water use. However, they can provide important support to their retail water suppliers through adopted policies and programs to encourage demand reduction in their service area. Wholesale water suppliers can also participate in a Regional Alliance established to meet the region's daily per capita water use targets.

As discussed in Chapter 2, the Salinas District does not receive water supply from wholesale water suppliers.

5.2 Updating Calculations from 2010 UWMP

The District reported base period population and water use, selected the 2020 target method, and calculated its 2020 water use target in its 2010 UWMP. SB X7-7 allows the District to update these estimates, change the target methodology, and revise its 2020 urban water use target in its 2015 UWMP (CWC 10608.20).

Per the UWMP Guideline requirements, Cal Water has updated District population estimates to incorporate information from the 2010 Census that was not available at the time the 2010 UWMP was prepared. It has not changed the base period or methodology upon which the District's 2020 urban water use target is based. The updated population estimates are lower than the estimates in the 2010 plan for most years. A comparison between the two sets of population estimates is provided in Appendix I. The revised population estimates increased the District's 2020 water use target from 117 to 120 GPCD.

5.3 Baseline Periods

Under SB X7-7 urban retail water suppliers must establish two baseline periods for historical water use and population in the District. The first of these is either a 10- or 15-year continuous period ending between 2004 and 2010. The second is a 5-year continuous period ending between 2007 and 2010. The 10-15 year period is used to establish the 2020 water use target under Method 1 (CWC 10608.20). The 5-year period is used to confirm that the selected 2020 target meets SB X7-7's minimum water use reduction requirements (CWC 10608.22). The baseline periods the District is using are summarized in SB X7-7 Table 1.

SB X7-7 Table 1: Baseline Period Ranges			
Baseline	**Parameter**	**Value**	**Units**
10- to 15-year baseline period	2008 total water deliveries	19,719	Acre Feet
	2008 total volume of delivered recycled water	0	Acre Feet
	2008 recycled water as a percent of total deliveries	0.00%	percent
	Number of years in baseline period[1]	10	years
	Year beginning baseline period range	1999	
	Year ending baseline period range[2]	2008	
5-year baseline period	Number of years in baseline period	5	years
	Year beginning baseline period range	2003	
	Year ending baseline period range[3]	2007	
[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 ending year must be between December 31, 2004 and December 31, 2010.			
[3]The ending year must be between December 31, 2007 and December 31, 2010.			

5.3.1 Determination of the 10-15 Year Baseline Period

The 10-15 year baseline period must be a continuous period ending between 2004 and 2010. It can be up to 15 years in length if recycled water comprised 10 percent or more of the retail urban water supplier's 2008 deliveries. Otherwise, the baseline period is set to 10 years.

The Salinas District did not have recycled water deliveries in 2008. Therefore it is using a 10-year baseline period commencing January 1, 1999 and running through December 31, 2008. The 10-year baseline period is unchanged from the 2010 UWMP.

5.3.2 Determination of the 5-Year Baseline

The 5-year baseline period must be a continuous period ending between 2007 and 2010. The Salinas District's 5-year baseline period commences January 1, 2003 and runs through December 31, 2007. The 5-year baseline period is unchanged from the 2010 UWMP.

5.4 Service Area Population

As noted above, Cal Water has updated the baseline period population estimates to incorporate information from the 2010 Census that was not available at the time the 2010 UWMP was prepared. Updating resulted in a small change in the original population estimates.

Urban retail water suppliers must estimate their service area population in a manner that is consistent with DWR requirements. For water suppliers whose boundaries correspond by 95 percent or more with a city or census designated place, population estimates prepared by the Department of Finance may be used. Where this is not the case, water suppliers may use the DWR Population Tool or estimate their population using other methods, provided these methods comply with Methodology 2 – Service Area Population – of DWR's *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use*.

Cal Water uses a population estimation methodology based on overlaying Census Block data from the 2000 and 2010 Censuses with the District's service area. LandView 5 and MARPLOT software are used with these data to estimate population per dwelling unit for 2000 and 2010. The per dwelling unit population estimates are then combined with Cal Water data on number of dwelling units served to estimate service area population for non-Census years.

Cal Water also estimated service area population using DWR's Population Tool. The estimates prepared using Cal Water's methodology and DWR's Population Tool differed by less than one percent. A comparison of the estimates generated by the two approaches is provided in Appendix I. Cal Water is electing to use the population estimates produced by its methodology in order to maintain consistency with population projections it has prepared in other planning documents and reports.

The population methodology and estimates used to calculate baseline and 2015 daily per capita water use are summarized in SB X7-7 Tables 2 and 3.

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. DWR Population Tool**
☑	**3. Other** DWR recommends pre-review

SB X7-7 Table 3: Service Area Population		
Year		**Population**
10 to 15 Year Baseline Population		
Year 1	1999	117,867
Year 2	2000	120,376
Year 3	2001	121,182
Year 4	2002	121,019
Year 5	2003	121,132
Year 6	2004	121,408
Year 7	2005	120,742
Year 8	2006	119,925
Year 9	2007	119,103
Year 10	2008	117,911
5 Year Baseline Population		
Year 1	2003	121,132
Year 2	2004	121,408
Year 3	2005	120,742
Year 4	2006	119,925
Year 5	2007	119,103
2015 Compliance Year Population		
2015		121,203

5.5 Gross Water Use

Annual gross water use is defined as the amount of water entering the District's distribution system over a 12-month period, excluding:

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

Gross water use must be reported for each year in the baseline periods as well as 2015. The Salinas District's annual gross water use is summarized in SB X7-7 Table 4. Volumes are in acre-feet. No water delivery exclusions are taken.

SB X7-7 Table 4: Annual Gross Water Use									
	Baseline Year	**Volume Into Distrib. System**	**Deductions**						**Annual Gross Water Use**
			Recycled Water	Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water	Water Delivered for Agricultural Use	Process Water	
10 to 15 Year Baseline - Gross Water Use									
Year 1	1999	18,690	0	0	0	0	0	0	18,690
Year 2	2000	18,560	0	0	0	0	0	0	18,560
Year 3	2001	19,526	0	0	0	0	0	0	19,526
Year 4	2002	20,629	0	0	0	0	0	0	20,629
Year 5	2003	21,013	0	0	0	0	0	0	21,013
Year 6	2004	21,705	0	0	0	0	0	0	21,705
Year 7	2005	20,752	0	0	0	0	0	0	20,752
Year 8	2006	20,310	0	0	0	0	0	0	20,310
Year 9	2007	20,848	0	0	0	0	0	0	20,848
Year 10	2008	19,719	0	0	0	0	0	0	19,719
10 - 15 year baseline average gross water use									**20,175**
5 Year Baseline - Gross Water Use									
Year 1	2003	21,013	0	0	0	0	0	0	21,013
Year 2	2004	21,705	0	0	0	0	0	0	21,705
Year 3	2005	20,752	0	0	0	0	0	0	20,752
Year 4	2006	20,310	0	0	0	0	0	0	20,310
Year 5	2007	20,848	0	0	0	0	0	0	20,848
5 year baseline average gross water use									**20,926**
2015 Compliance Year - Gross Water Use									
2015		14,659	0	0	0	0	0		**14,659**

5.6 Baseline Daily Per Capita Water Use

Baseline daily per capita water use is calculated by converting annual gross water use to gallons per day and dividing by service area population. Daily per capita water use for each baseline year and 2015 are summarized in SB X7-7 Table 5.

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)				
Baseline Year		Service Area Population	Annual Gross Water Use (AF)	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1999	117,867	18,690	142
Year 2	2000	120,376	18,560	138
Year 3	2001	121,182	19,526	144
Year 4	2002	121,019	20,629	152
Year 5	2003	121,132	21,013	155
Year 6	2004	121,408	21,705	160
Year 7	2005	120,742	20,752	153
Year 8	2006	119,925	20,310	151
Year 9	2007	119,103	20,848	156
Year 10	2008	117,911	19,719	149
10-15 Year Average Baseline GPCD				**150**
5 Year Baseline GPCD				
Baseline Year		Service Area Population	Annual Gross Water Use (AF)	Daily Per Capita Water Use (GPCD)
Year 1	2003	121,132	21,013	155
Year 2	2004	121,408	21,705	160
Year 3	2005	120,742	20,752	153
Year 4	2006	119,925	20,310	151
Year 5	2007	119,103	20,848	156
5 Year Average Baseline GPCD				**155**
2015 Compliance Year GPCD				
2015		121,203	14,659	**108**

5.7 2015 and 2020 Targets

Urban retail water suppliers may select from four GPCD target methods (CWC 10608.20).

- Target Method 1: 20% reduction from 10-year baseline GPCD
- Target Method 2: Water use efficiency performance standards
- Target Method 3: 95% of Hydrologic Region Target
- Target Method 4: Savings by water sector, DWR Method 4

Regardless of target method selected, the final target cannot exceed 95 percent of the 5-year baseline period average GPCD (CWC 10608.22).

The Salinas District has selected Target Method 1, which sets the 2020 target to either 80 percent of the 10-year baseline or 95 percent of the 5-year baseline average GPCD, whichever is less. This results in a 2020 target of 120 GPCD. The 2015 interim target of 135 GPCD is the midpoint between the 10-year baseline average GPCD and the 2020 target.

The District's GPCD baselines and targets are summarized in Table 5-1.

Table 5-1: Baselines and Targets Summary

Baseline Period	Start Years	End Years	Average GPCD	2015 Interim Target	Confirmed 2020 Target
10-15 year	1999	2008	150	135	120
5 Year	2003	2007	155		

5.8 2015 Compliance Daily per Capita Water Use

Compliance daily per capita water use in 2015 is summarized in Table 5-2. In reporting their compliance daily per capita water use, urban retail water suppliers may elect to consider the following factors and adjust the estimate accordingly (CWC 10608.24):

- Differences in evapotranspiration and rainfall in the baseline period compared to the compliance reporting period.
- Substantial changes to commercial or industrial water use resulting from increased business output and economic development that have occurred during the reporting period.
- 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.

Cal Water is not electing to make any adjustments to the District's compliance daily per capita water use in 2015. The Salinas District's 2015 compliance daily per capita water use is 108 gallons compared to its 2015 interim target of 135 gallons. The Salinas District is in compliance with its 2015 interim target.

The low per capita water use in 2015 partially reflects the impacts of the Drought Emergency Regulation adopted by the State Water Resources Control Board in May of 2015 (SWRCB Resolution No. 2015-0032). Among other things, the Drought Emergency Regulation mandated urban retail water suppliers reduce potable water use between

June of 2015 and February of 2016 by percentage amounts specified by the State Water Resources Control Board. The Salinas District was ordered to reduce potable water use by 16 percent over this period relative to use over the same period in 2013.

However, the Drought Emergency Regulation does not explain all of the decline in per capita water use, which has been trending downward since 2004 when it reached its zenith of 160 gallons per person per day. By 2014 this had fallen by 19 percent, to 129 GPCD. Between 2014 and the end of 2015, per capita water use had fallen an additional 16 percent, to 108 GPCD.

Table 5-2: 2015 SB X7-7 Compliance

2015 Actual GPCD	2015 Interim Target	Optional Adjustments to 2015 GPCD *From Methodology 8*				Actual as Percent of Target	In Compliance ? Y/N
		Extraordinary Events	Economic Adjust	Weather Adjust	Adjusted Actual 2015 GPCD		
108	135	0	0	0	108	80%	YES

5.9 Regional Alliance

Urban retail water suppliers may report on the requirements of SB X7-7 individually or as a member of a "Regional Alliance." The Salinas District is a member of a Regional Alliance and this UWMP provides information on the District's progress towards meeting its SB X7-7 water conservation targets as both an individual urban retail water supplier and a member of a Regional Alliance.

The Salinas District has formed a Regional Alliance with other Cal Water urban retail water districts located in the Central Coast Hydrologic Region. Compliance with the Regional Alliance's 2015 interim target is demonstrated in Appendix I and summarized in Table SB X7-7 RA Table 1 – Compliance Verification on the following page.

The Regional Alliance's 2015 compliance daily per capita water use is 106 gallons compared to its 2015 interim target of 135 gallons. The Regional Alliance is in compliance with its 2015 interim target.

SB X7-7 RA Table 1: Compliance Verification				
2015 GPCD (Actual)	2015 Interim Target GPCD	Economic Adjustment[1] *Enter "0" if no adjustment*	Adjusted 2015 GPCD *(if economic adjustment used)*	Did Alliance Achieve Targeted Reduction for 2015?
106	135	0	106	YES

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

Chapter 6
System Supplies

The water supply for the customers of the Salinas District is completely reliant on groundwater wells as the sole water source. This will likely continue to be the case for many years. Potential future supply sources will be discussed in the following sections.

Determining the actual supply available to Cal Water in any given year is complicated by several factors. The first of which is that there has not been a legal adjudication of groundwater rights for basin pumpers. The aquifers of the Salinas Valley have been in a state of overdraft for many years. The effects of this are seen more directly in communities along the coast near the mouth of the Salinas River. Local hydrogeologic conditions vary among the different satellite water systems that make up the Salinas District. However, the aquifers surrounding the City of Salinas have seen a reduction in groundwater storage and the encroachment of the saline front due to salt water intrusion. The Monterey County Water Resources Agency (MCWRA) releases flows from San Antonio and Nacimiento reservoirs to provide groundwater recharge throughout the year and will continue to work toward balancing the water budget in the Salinas Valley.

Cal Water recognizes the need for responsible management of groundwater resources and will remain committed to implementing conservation programs to minimize its pumping in the basin, and will remain supportive of the management efforts of MCWRA. Cal Water will only pump enough water to meet the needs of its customers. For the purposes of this UWMP the available supply in future years is considered to be equal to the projected demand, as discussed in Chapter 4.

6.1 Purchased Water

Cal Water does not purchase treated water for its customers in the Salinas District. MCWRA does not provide treated purchased water for urban use.

6.2 Groundwater

All water delivered to the Salinas District customers is from groundwater. The groundwater is extracted from the aquifer segments of the Salinas Valley known as the Pressure Area and Eastside Area. The Salinas Valley Basin is in an overdraft condition. While the basin remains unadjudicated, DWR has listed the groundwater basin as a high priority.

6.2.1 Basin Description

The Pressure sub-area is a region of gradually declining groundwater elevations. This area is characterized by three confined aquifer systems, overlain and separated by thick clay layers that act as aquicludes. These aquifers, named for their relative depths, are known as the “180 Foot", the “400 Foot”, and “900 Foot” aquifers.

The following description and additional details of the basin are given in the DWR's Groundwater Bulletin 118[7]:

The District has portions in both the 180/400 Foot Aquifer Subbasin (3-4.01) and the Eastside Aquifer Subbasin (3-4.02). The 180/400 Foot Aquifer Subbasin includes the lower reaches and mouth of the Salinas River. The Southwestern basin boundary is the contact of Quaternary Alluvium or Terrace Deposits with the granitic basement of the Sierra de Salinas. Further north along the western Salinas Valley margin the basin boundary is the contact with the Quaternary Paso Robles Formation, or Aromas Red Sands of the Corral de Tierra Area Subbasin. The extreme northwest boundary of the sub basin is shared with the Salinas Valley-Seaside Area Subbasin along the seaward projection of the King City Fault.

The Subbasin is bounded by the Monterey Bay to the northwest. The northern sub basin boundary is shared with the Pajaro Valley Groundwater Basin and coincides with the inland projection of a 400-foot deep, buried clay-filled paleodrainage of the Salinas River. This acts as a barrier to groundwater flow between these sub basins. The northeastern boundary is shared throughout most of its length by the adjacent Salinas Valley-Eastside Subbasin, and to the north with a shorter length of the Langley area Subbasin. The northeastern boundary generally coincides with the northeastern limit of confining conditions in the 180/400-Foot Aquifer Subbasin and the location of State Highway 101. The southeastern boundary is shared with the Lower Forebay sub basin and is the approximate limit of confining conditions in an up-valley direction. The 180/400-Foot Aquifer Subbasin boundaries generally coincide with those of the Pressure Sub area of the Monterey County Water resources Agency (MCWRA).

The Eastside Aquifer sub basin extends from approximately five miles north of the city of Salinas to twenty five miles south of the town of Gonzales along the eastern side of the lower Salinas Valley. The sub basin is bounded to the north by the Pleistocene Aromas Red Sands of the Salinas Valley-Langley Area Subbasin. To the south, the sub basin shares a boundary with the Quaternary Alluvium deposits of the Salinas Valley-Lower Forebay

[7] California's Ground Water Bulletin 118, 2003; Central Coast Hydrologic Region; Salinas Valley Groundwater Basin; Groundwater Basin Numbers: 3-4.01, 3-4.02
http://www.water.ca.gov/pubs/groundwater/bulletin_118/california's_groundwater__bulletin_118_-_update_2003_/bulletin118_entire.pdf

Aquifer Subbasin. The western sub basin boundary generally coincides with the northeastern limit of confining conditions in the adjacent 180/400-Foot Aquifer Subbasin and with Highway 101. The eastern boundary is the contact of the Quaternary Terrace deposits with granitic rocks of the Gabilan Range. The sub basin boundaries are generally correlative with those of the East Side sub area of the MCWRA. Intermittent streams such as the Natividad, Alisal, Quail, Parsons, Muddy and Johnson Creeks drain the western slopes of the Gabilan Range and flow across the Subbasin toward the Salinas River on the west side of the Valley.

6.2.2 Groundwater Management

The groundwater basin that Cal Water pumps from is an un-adjudicated basin. Recharge efforts are managed by Monterey County Water Resources Agency. The Agency developed the Monterey County Groundwater Management Plan, which is included in Appendix G.

MCWRA requires annual extraction reports form all agricultural and municipal well operators; and has researched, developed and/or constructed projects to reduce seawater intrusion, manage nitrate contamination in the ground water, provide adequate water supplies to meet current and future needs, and to balance the ground water basin in the Salinas Valley.

Sustainable Groundwater Management Act

Background – On September 16, 2014, Governor Brown signed into law Assembly Bill 1739, Senate Bill 1168, and Senate Bill 1319 (AB-1739, SB-1168, and SB-1319). This three-bill legislative package is known collectively as the Sustainable Groundwater Management Act (SGMA). SGMA was amended in the later part of 2015 by Senate Bill 13, Senate Bill 226 and Assembly Bill 1390 to provide clarity to the original law and guidance on groundwater adjudications. This new legislation defines sustainable groundwater management as the "management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results" [Water Code § 10721(u)]. The legislation defines "undesirable results" to be any of the following effects caused by groundwater conditions occurring throughout the basin [Water Code § 10721(w) (1-6)]:

- Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply;
- Significant and unreasonable reduction of groundwater storage;
- Significant and unreasonable seawater intrusion;

- Significant and unreasonable degraded water quality;
- Significant and unreasonable land subsidence;
- Surface water depletions that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

The legislation provides for financial and enforcement tools to carry out effective local sustainable groundwater management through formation of Groundwater Sustainability Agencies (GSA's) consisting of local public agencies, water companies regulated by the CPUC and mutual water companies. The legislation requires that GSA's within High and Medium Priority basins under the California Statewide Groundwater Elevation Monitoring (CASGEM) program subject to critical conditions of overdraft prepare and submit a Groundwater Sustainability Plan (GSP) for the basin by January 31, 2020 [Water Code § 10720.7(a) (1)], and requires GSA's in all other groundwater basins designated as High or Medium Priority basins to prepare and submit a GSP by January 31, 2022 [Water Code § 10720.7 (a) (2)]. Following State approval, the basin would thereafter be managed under the GSP The legislation does not require adjudicated basins to develop GSPs, but they are required to report their water use.

Intended Outcomes and Benefits – The key intended outcomes and benefits of SGMA are numerous, and include:

- Advancement in understanding and knowledge of the State's groundwater basins and their issues and challenges;
- Establishment of effective local governance to protect and manage groundwater basins;
- Management of regional water resources for regional self-sufficiency and drought resilience;
- Sustainable management of groundwater basins through the actions of GSA's, utilizing State assistance and intervention only when necessary;
- All groundwater basins in California are operated to maintain adequate protection to support the beneficial uses for the resource;
- Surface water and groundwater are managed as "a Single Resource" to sustain their interconnectivity, provide dry season base flow to interconnected streams, and support and promote long-term aquatic ecosystem health and vitality;

- A statewide framework for local groundwater management planning, including development of sustainable groundwater management best management practices and plans;

- Development of comprehensive and uniform water budgets, groundwater models, and engineering tools for effective management of groundwater basins;

- Improved coordination between land use and groundwater planning;

- Enforcement actions as needed by the SWRCB to achieve region-by-region sustainable groundwater management in accordance with the 2014 legislation.

To assist in attaining the above outcomes, the California Department of Water Resources (DWR) will provide GSA's with the technical and financial assistance necessary to sustainably manage their water resources. The benefits of these outcomes include:

- A reliable, safe and sustainable water supply to protect communities, farms, and the environment, and support a stable and growing economy;

- Elimination of long-term groundwater overdraft, an increase in groundwater storage, avoidance or minimization of subsidence, enhancement of water flows in stream systems, and prevention of future groundwater quality degradation.

Cal Water Position – Cal Water's groundwater basin philosophy continues to be to work collaboratively with all stakeholders in the basins where we operate and to do what is best for the groundwater basin including the sharing of burden(s) and benefits on an equitable basis with said stakeholders. Cal Water recognizes and deeply supports the goals, objectives, and intended outcomes of the SGMA. Moreover, the company recognizes the numerous challenges of the legislation along a variety of technical, legal, political, and financial/economic dimensions, particularly when the geographical diversity of the Company's service territory is considered. None-the-less, Cal Water intends to take an active role in the local and state-wide management of groundwater resources over the next 5-25+ years by fully supporting and participating in the principal edicts of SGMA. A number of specific steps that the Company intends to take with respect to this position and role include (among others):

- Outreach to public agencies to ensure that the Company's presence, rights and interests, as well as historical and current resource management concerns are honored/incorporated within the GSA and GSP formulation process(es);

- Outreach to applicable local and regulatory agencies to ensure that the Company is at full participation, while also meeting the requirements and expectations set forth by SGMA;

- The enhanced use of digital/electronic groundwater monitoring equipment and other new technology aimed at measuring withdrawal rates, pumping water levels, and key water quality parameters within the context of day-to-day operations;

- Full participation in the development of GSP's and formulation of groundwater models being constructed in basins where the Company has an operating presence;

- Full participation in individual and/or joint projects aimed at mitigating seawater intrusion and other "undesirable results";

- Inclusion of sound groundwater management principles and data in all applicable technical reports, studies, facility master plans, and urban water management plans (including this 2015 update), particularly as these undertakings relate or pertain to water resource adequacy and reliability;

- Inclusion of sound groundwater management principles and data in all general rate case (GRC) filings and grant applications to ensure that resource management objectives remain visible and central to Cal Water's long-term planning/budgeting efforts;

SGMA related information in the 2015 UWMP – The Urban Water Management Plans prepared by Cal Water over the past decade, including the 2015 update, already contain many of the elements required by SGMA and thus already serve as a road map toward the implementation of SGMA and the basin GSP. The UWMP addresses all water supply sources including groundwater. SGMA's specific concerns with groundwater are addressed as follows:

- Chapter 4 addresses Cal Water's historic and future customer growth and water demand in the basin.

- Chapter 6 addresses Cal Water's historic and future water supplies in the basin.

- Chapter 6 addresses the potential actions Cal Water will need to take to develop additional water supplies to maintain supply reliability.

- Chapter 6 discusses water quality and necessary actions to protect and decontaminate water supplies.

- Chapter 6 addresses supplementing water supplies with recycled water and desalinated water.

- Chapter 7 addresses the projected ability of the combined supply, including groundwater, to reliable serve customer demands under normal, single-dry-year and multiple-dry-year conditions.

6.2.3 Overdraft Conditions

The Salinas Valley Basin is in an overdraft condition. The state has designated the 180/400 foot aquifers as critically overdrafted. While the basin remains unadjudicated, DWR has listed the groundwater basin as a high priority. The main concern of the overdraft is not the water level but the seawater intrusion. Since the ground elevation in Salinas ranges from 40 to 70 feet above sea level, the three aquifers of the Pressure Area are all situated below sea level. There is hydrologic continuity with the ocean in all three aquifers.

MCWRA has estimated that the annual non-drought overdraft of the Salinas Basin is approximately 45,300 AF per year. Because of the hydrologic continuity between the ocean and the aquifers of the Pressure Area, seawater has been intruding into these aquifers at a rate of approximately 28,800 AF per year. During droughts, the annual overdraft can escalate to between 150,000 and 300,000 AF per year.

The intruding seawater has advanced into the 180 Foot aquifer to within one mile of Cal Water's closest well. Cal Water has shifted production as much as possible out of the 180 Foot and Eastside aquifers and located it further south and more in the 400 Foot aquifer of the Pressure area. Cal Water does not pump from the 900 Foot aquifer.

The intrusion of seawater into the Salinas Valley has been a problem for many years. A solution was identified as early as 1946 when the State of California proposed a three-part remedy:

- Construct several large reservoirs to capture excess storm flow on the upper reaches of the Salinas River and its tributaries.
- Recharge groundwater in the upper valley and Forebay sub-areas of the Salinas Valley with the captured runoff
- Extract portions of the augmented groundwater and transmit it via a conveyance system to the Eastside and Pressure sub-areas of the basin so that the water users in this northern-most region of the valley can reduce their use of groundwater.

The first two parts of this solution have been constructed and are in operation. Nacimiento and San Antonio reservoirs were built and are operated by the MCWRA. The water that they capture is released in a controlled manner to recharge the aquifers in the upper and Forebay areas through the natural riverbed.

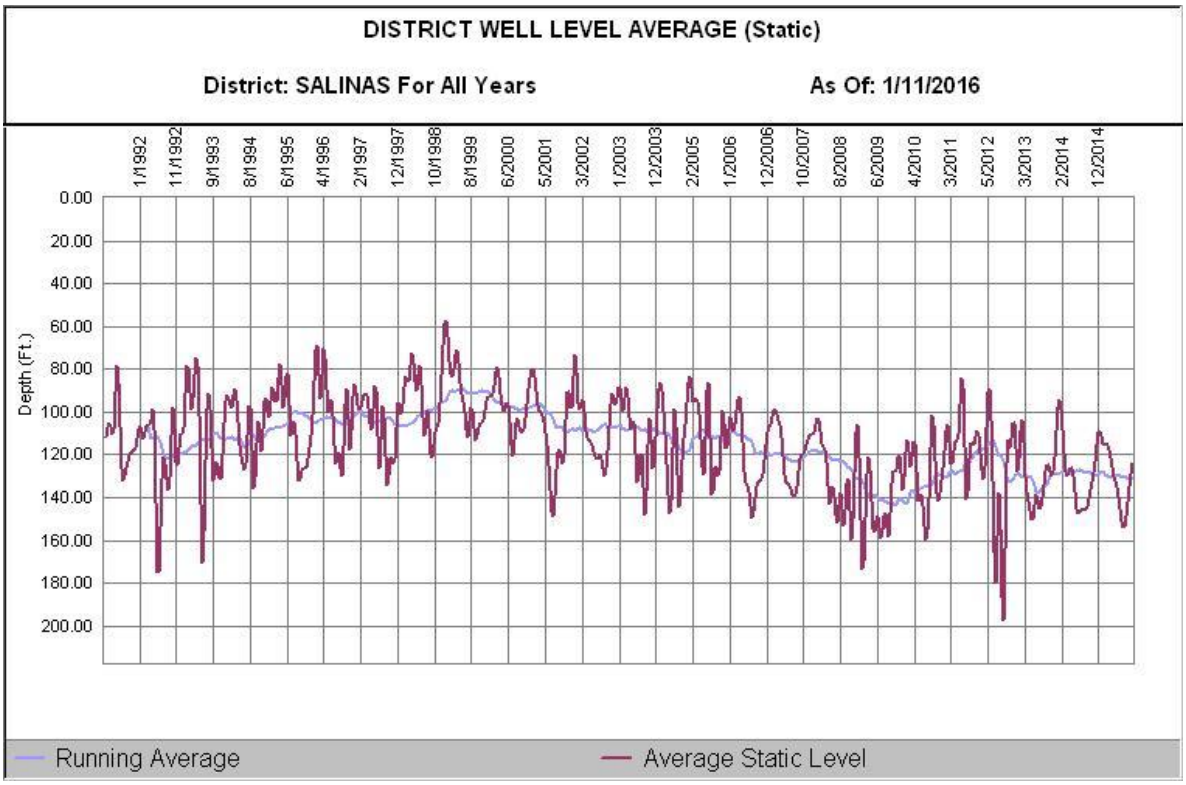
The final part of the solution however, has never been implemented. As a result, the lack of serious groundwater recharge in the north valley means that the groundwater production in the north valley continues to add to the overdraft of the Pressure and Eastside aquifers, which permits the seawater intrusion to continue.

Some years ago, the Castroville Irrigation Project was constructed. This project produces high quality irrigation water for agricultural use out of treated wastewater supplied from the regional wastewater plant in Marina. This recycled water offsets some of the local groundwater production and alleviates a portion of the problem. However, this project does not provide a complete solution.

A conceptual design for Phase II of the Salinas Valley Water Project (SVWP) has been developed by MCWRA. Under this plan additional winter flood flows would be diverted from the Salinas River. These diversions, up to 135,000 AFY, could be directly used by urban customers. A technical memorandum was completed in 2013. Phase II incorporates two surface water diversion points and will be accompanied by conveyance and delivery facilities the locations and termini of which will be evaluated in an Environmental Impact Report that will need to be developed. A Notice of Preparation has been issued in 2014.

Except for annual deviation of approximately thirty-five feet, the average static groundwater levels in District wells since 1961 has changed elevation only during drought years. The intruding seawater lends stability to the groundwater level. The well level average since 1990 is shown in Figure 6-1.

Figure 6-1: District Well Level Average (Static)



6.2.4 Historical Pumping

The volume of groundwater pumped since 2011 is shown in Table 6-1.

Table 6-1 Retail: Groundwater Volume Pumped (AF)						
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
Alluvial Basin	Salinas Valley Basin	18,043	18,615	19,060	17,422	14,659
Total		**18,043**	**18,615**	**19,060**	**17,422**	**14,659**

6.3 Surface Water

The Salinas District does not currently impound or divert surface water.

6.4 Stormwater

The City of Salinas has developed Stormwater Standard Plans and Stormwater Development Standards in the permitting process for new and redevelopment projects.

This documents contains both stormwater design requirements and design guidance intended to minimize the impacts of urban runoff to receiving waters and to promote healthy watersheds.

There are no plans to divert stormwater for beneficial reuse in the Salinas District.

6.5 Wastewater and Recycled Water

The recycling of wastewater offers several potential benefits to Cal Water and its customers. Perhaps the greatest of these benefits is to help maintain a sustainable groundwater supply either through direct recharge, or by reducing potable supply needs by utilizing recycled water for appropriate uses (e.g., landscape, irrigation) now being served by potable water. Currently, no wastewater is recycled for direct reuse in the District. The potential amount of recycled water that can be produced is proportional to the amount of wastewater that is generated by District, and is discussed in the following sections.

6.5.1 Recycled Water Coordination

All of the recycled water facilities are maintained by the Monterey Regional Water Pollution Control Agency and are outside of the Salinas District area. There are no current plans to bring recycled water to District area. Cal Water will be coordinating with the City of Salinas and Monterey County about the potential for bringing recycled water into the District and developing a list of customers that could utilize that water during the update of the Water Supply and Facilities Master Plan which is planned for the near future.

6.5.2 Wastewater Collection, Treatment, and Disposal

The City of Salinas operates and maintains the sewer system consisting of gravity sewers, pumping stations, and force mains to collect wastewater from residential and industrial customers. The collected residential wastewater is discharged to trunk sewers and interceptors owned and operated by the Monterey Regional Water Pollution Control Agency (MRWPCA). The residential wastewater is conveyed to the MRWPCA Regional Treatment Plant for treatment. This facility is outside the Salinas District boundaries.

Industrial wastewater is treated at the City of Salinas Industrial Wastewater Treatment Plant, which has a capacity to treat 4 mgd but currently receives 2 mgd from industrial customers in Salinas. The wastewater at the industrial plant undergoes treatment with aeration ponds and is discharged to percolation/evaporation ponds without disinfection. Currently, treated wastewater from the industrial wastewater treatment plant is not recycled.

Table 6-2 estimates the volume of wastewater collected from District customers in 2015. The estimate is calculated by annualizing 90% of January water use in the service area. According to MRWPCA, 60 percent of all the effluent it receives is recycled and used for agricultural irrigation outside Cal Water's service area.

Table 6-2 Retail: Wastewater Collected Within Service Area in 2015						
Percentage of 2015 service area covered by wastewater collection system *(optional)*						
Percentage of 2015 service area population covered by wastewater collection system *(optional)*						
			Receiving Wastewater Treatment			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected in 2015 (AF)	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party?
City of Salinas	*Estimated*	10,647	Monterey Regional Water Pollution Control Agency (MRWPCA)	MRWPCA Regional Treatment Plant	*No*	
Total Wastewater Collected from Service Area in 2015:		**10,647**				

Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2015										
✓	No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.									
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)*	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treat-ment Level	2015 Volumes			
							Waste water Treated	Discharged Treated Waste water	Recycled Within Service Area	Recycled Outside of Service Area
						Total				

6.5.3 Recycled Water System

The wastewater at the Regional Treatment Plant undergoes secondary treatment with trickling filters, followed by activated carbon, dual media filtration, and chlorine disinfection for recycled water. The plant has a capacity to treat 29.6 million gallons per day of wastewater. During the summer months, 100 percent of the treated effluent (approximately 4,600 acre-feet per year) from the plant is recycled for agricultural irrigation of artichokes and a variety of crops. Wastewater is not recycled during the winter months, but is discharged without chlorination to Monterey Bay.

It is anticipated that no new reclaimed water customers will be acquired for the MRWPCA Regional Treatment Plant in the near future. All treated wastewater supplies are used for crop irrigation in the summer months. Using reclaimed water for any other purpose (e.g., commercial/residential irrigation and toilet flushing) is not considered economically viable during the next 20 years, because the City of Salinas is 10 miles from the treatment plant. The cost of transmission and distribution of recycled wastewater to the City could not be justified based on current and anticipated costs of water and of wastewater disposal. However, the potential exists to use recycled wastewater from the City of Salinas Industrial Wastewater Treatment Plant for crop irrigation within the next 20 years.

The agricultural reuse of treated wastewater from either of the treatment plants reduces the amount of groundwater pumping in the area. The use of recycled water for agriculture offsets part of the demand for surface water and groundwater. Because agricultural application utilizes all of the treated wastewater supply during the summer and is the only anticipated use of reclaimed water in the future, the projected recycled water supply for Cal Water's Salinas service area through the year 2040 is 0 acre-feet per year. Cal Water has not implemented any incentive programs to encourage recycled water use because it does not own and operate the wastewater system.

6.5.4 Recycled Water Beneficial Uses

As discussed above, 60 percent of all the effluent it receives is recycled and used for agricultural irrigation outside Cal Water's service area.

Table 6-4 Retail: 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:									
Name of Agency Operating the Recycled Water Distribution System:									
Supplemental Water Added in 2015									
Source of 2015 Supplemental Water									
Beneficial Use Type	General Description of 2015 Uses	Level of Treatment	2015	2020	2025	2030	2035	2040 (opt)
Agricultural irrigation								
Landscape irrigation (exc golf courses)								
Golf course irrigation								
Commercial use								
Industrial use								
Geothermal and other energy production								
Seawater intrusion barrier								
Recreational impoundment								
Wetlands or wildlife habitat								
Groundwater recharge (IPR)								
Surface water augmentation (IPR)								
Direct potable reuse								
		Total:	**0**	**0**	**0**	**0**	**0**	**0**
IPR - Indirect Potable Reuse								

Table 6-5 Retail: 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 (exc golf courses)		
Golf course irrigation		
Commercial use		
Industrial use		
Geothermal and other energy production		
Seawater intrusion barrier		
Recreational impoundment		
Wetlands or wildlife habitat		
Groundwater recharge (IPR)		
Surface water augmentation (IPR)		
Direct potable reuse		
Total		

6.5.5 Actions to Encourage and Optimize Future Recycled Water Use

Cal Water will be investigating the potential of bringing recycled water into the District and developing a list of customers that would benefit during the update of the Water Supply and Facilities Master Plan which is planned for the near future.

Cal Water's supply portfolio in some districts already includes recycled water; elsewhere, the Company is participating in studies of the possibility of adding this supply source. Cal Water is eager to expand its portfolio to provide recycled water to its customers wherever possible, and to form partnerships with other agencies and jurisdictions to accomplish this. Any such project must be economically feasible. Approval of such an investment by the CPUC is contingent on a demonstration that it is beneficial to ratepayers.

Table 6-6 Retail: Methods to Expand Future Recycled Water Use			
✓	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
NA	NA	NA	NA

6.6 Desalinated Water Opportunities

There is potential to use desalinated water as a source of supply in the Salinas District. However, Salinas is significantly inland from the ocean and distribution would be cost prohibitive. Because of this, it is unlikely that desalinated water directly supplied to the District would be a viable option in Salinas. However, other desalination opportunities are being investigated.

The Monterey County Coalition has proposed a solution to the supply shortage on the Monterey Peninsula that includes desalination as a means to serve projected future demands. Under the current proposal, by California American Water Company (Cal-Am) and Marina Coast Water District, brackish groundwater would be treated to supply water for municipal and industrial uses, in addition to developing a recycled water program for landscape irrigation and groundwater replenishment.

California American Water Company (Cal-Am) originally proposed a Coastal Water Project (CWP) which involves building a desalination plant and piping the water down to their customers on the Monterey Peninsula. Cal Water, in cooperation with Camp, Dresser, and McKee, conducted a *Feasibility Study for a Long Term Water Supply Plan* for the Salinas District. This study provided a detailed analysis of potential water supply solutions for Cal Water's service area, which included participation in the CWP. The results of the analysis indicated that primarily due to cost concerns, the CWP was not the preferred solution. Cal Water has a responsibility to provide its customers with the highest quality water in the most cost-effective manner. Because of this Cal Water has decided not to participate in the CWP at this time.

In addition, DeepWater Desal LLC (DWD) is developing the Monterey Bay Regional Water Project (MBRWP or the Project) at Moss Landing, California. The MBRWP will consist of a seawater reverse osmosis (SWRO) desalination facility and co-located seawater-cooled computer data centers. The Project will be capable of producing up to 25,000 acre-feet of high quality potable water annually. Seawater desalination has been recognized as an important component of the overall regional approach to addressing water supply for the Monterey Bay region. The volume of water produced at the facility, and its central

location within the region, make it an ideal solution to augment potable water supplies available in the region. The Project is intended to make a new supply of potable water available north to Santa Cruz, east to Salinas and south to the Monterey Peninsula. The project is currently undergoing CEQA evaluation. Cal Water is in the early stages of investigating the technical, social, environmental, and economic merits and impacts of transferring as much as 10,000 AFY (or perhaps more) of desalinated supply from this facility.

6.7 Exchanges or Transfers

If groundwater supplies are found to be insufficient to meet future demands, Cal Water could pursue transfer or exchange opportunities in its Salinas District. Surface water rights could be leased or purchased to provide additional supply either through direct delivery of treated water to Cal Water customers or by artificially recharging groundwater and using existing wells.

6.7.1 Exchanges

There are no water exchanges currently planned for the District.

6.7.2 Transfers

There are no water transfers currently planned for the District.

6.7.3 Emergency Interties

The main Salinas system has an intertie with Alco Water. The satellite systems do not have any emergency interties.

6.8 Future Water Projects

A very aggressive well replacement program is needed to maintain adequate supply in the Salinas District. Over the next few years, many wells need to be replaced due to nitrates, uranium, MTBE, and sand contaminations.

As noted earlier, the *Feasibility Study for a Long Term Water Supply Plan* for the Salinas District evaluated potential water supply solutions for Cal Water's service area. The many supply options analyzed included drilling new wells, providing treatment to existing wells, promoting conservation, using desalinated water, and diverting surface water. These options were ranked using several criteria to determine the feasibility of each. Due primarily to regulatory and cost constraints, the desalination and surface water diversion options ranked low on the list of potential solutions.

In order for this to be feasible, there must be a coherent strategy to maintain and improve the health of the basin. Pursuant to the Sustainable Groundwater Management Act (SGMA), Monterey County is required to establish a Groundwater Sustainability Agency (GSA) by June 2017, and file a Groundwater Sustainability Plan (GSP) by January 2020. Because of the projects built, being built, and still planned in the Salinas Valley by MCWRA, there are early indications that achieving sustainability is feasible and Cal Water will be able to continue to rely on groundwater to supply the District. Moreover, since the *Feasibility Study*, another important supply option has arisen, namely the Deep Water Desal project. As noted in Section 6.6, Cal Water is currently investigating the development and use of potentially large volumes of desalinated supply from this project, which would make a notable contribution to basin health This effort is fully aligned with the provisions of SGMA, and it also more broadly supports other water supply planning goals and objectives deemed critical to Cal Water, such as supply portfolio diversification.

Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
✓	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format. LOCATION OF THE NARRATIVE_____					
Name of Future Projects or Programs	Joint Project with other agencies?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Agency
		If Yes, Agency Name				*This may be a range*

6.9 Summary of Existing and Planned Sources of Water

Table 6-8 shows the actual volumes of groundwater production for calendar year 2015. Table 6-9 shows the projected supply volumes through 2040.

For the purposes of this UWMP (acknowledging the various technical, economic, regulatory, and schedule uncertainties associated with the above-mentioned desalination option), it is assumed that groundwater will remain the sole supply source through 2040 and that source will be sufficient to serve all demands. Therefore, the groundwater supply amounts shown in Table 6-9 equal the projected demand in each year. Conversely, should the DeepWater project be implemented as noted above, long-term future reliance on local groundwater would be reduced to about 10,000 AFY.

Table 6-8 Retail: Water Supplies — Actual (AF)				
Water Supply	Additional Detail on Water Supply	2015		
		Actual Volume	Water Quality	Total Right or Safe Yield *(optional)*
Groundwater		14,659	Drinking Water	
Total		**14,659**		**0**

Table 6-9 Retail: Water Supplies — Projected (AF)										
Water Supply	**Projected Water Supply** *Report To the Extent Practicable*									
	2020		2025		2030		2035		2040 *(opt)*	
	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*
Groundwater	19,180		19,946		20,906		21,967		23,154	
Total	**19,180**		**19,946**		**20,906**		**21,967**		**23,154**	

6.10 Climate Change Impacts to Supply

Cal Water recently completed an initial study of climate change impacts for a sample of its districts, including Salinas.[8] The sample districts account for 85% of Cal Water's total 2014 production and reflect the diversity of all Cal Water districts, including geographic, hydrologic, and climatic conditions and primary and secondary supply sources. The study was undertaken because it is critical for Cal Water to gain a better understanding of the potential impacts of climate change on the availability of its diverse supplies. The impacts are inherently uncertain, but Cal Water believes that the only responsible course is to carefully incorporate climate change into its ongoing water supply planning.

The initial study represents a first step in that path. In order for Cal Water to determine how its long-term water supply planning should reflect climate change impacts, it must first have an understanding of what the impacts of climate change on its supply sources might be. That was the purpose of the study.

Changes in climate can affect the availability of local groundwater and surface water supplies, as well as purchased imported supplies. This study separately addressed the impacts on each of these for each sample district. It relied on the best available projections of changes in climate (temperature and precipitation) through the end of the century, and then used the climate projections to examine how surface water flows and groundwater recharge rates may change. The study generally relied on studies done by or data provided by wholesale suppliers.

The study results provide an integrated view of how projected climate changes may affect water supply availability for Cal Water's service districts, and represent a first step in integrating potential future climate change impacts into Cal Water's ongoing supply planning.

6.10.1 Estimating Changes in Climate

Climate change is primarily driven by increased concentrations of greenhouse gases (GHGs) in the atmosphere. The trajectory of future climate change is a function of the rate at which those concentrations are projected to increase and the manner in which the atmosphere and oceans respond to increased concentrations. Both are difficult to model. Thus, while the scientific community overwhelmingly agrees that climate change will occur (and indeed may already have begun), the trajectory of those changes is very uncertain.

[8] California Water Service Company, *Potential Climate Change Impacts on the Water Supplies of California Water Service*. January 2016.

The projections of temperature and precipitation that underlie this study are based on 40 of the latest Global Circulation Models (GCMs) run as part of the Coupled Model Intercomparison Project Phase 5 (CMIP5). Generally speaking, this type of approach is termed an ensemble analysis, for which the downscaled climate projections for any particular Cal Water Service District were based on the median of the 40 downscaled GCM datasets. The GCMs used by the analysis are driven by two GHG emission pathways that bound the possible trajectories of GHG concentrations.

6.10.2 Impacts of Climate Change on Water Supplies

Since the supplies for each district consist of a mix of local surface water, local groundwater, and/or purchased imports, climate change impacts were estimated for each of these components. Based on the breakdown of district production among the supply sources, Table 6-10 shows the ranges of projected overall climate change impacts on available supply, relative to the historic average. The Salinas supply reductions due to climate change are estimated to be between 6% and 7% by the end of the century.

Table 6-10 Projected Changes in Average Available Supply Due to Climate Change				
District	Percentage Change in Supply			
		2020	2050	2100
BK	Minimum	-10%	-10%	-12%
	Maximum	-12%	-16%	-20%
VIS	Minimum	-7%	-8%	-8%
	Maximum	-9%	-10%	-14%
KRV	Minimum	-13%	-16%	-19%
	Maximum	-16%	-21%	-31%
MPS/SSF/BG	Minimum	0%	-2%	-6%
	Maximum	0%	-7%	-15%
LAS	Minimum	-3%	-3%	-10%
	Maximum	-4%	-18%	-28%
CH	Minimum	2%	2%	0%
	Maximum	3%	1%	-3%
ORO	Minimum	0%	8%	5%
	Maximum	0%	-8%	-7%
DOM/HR/PV	Minimum	0%	0%	-1%
	Maximum	0%	-2%	-3%
STK	Minimum	0%	0%	-8%
	Maximum	0%	-14%	-17%
SLN	Minimum	-6%	-6%	-6%
	Maximum	-7%	-7%	-7%

6.10.3 Next Steps and Key Conclusions

Possible next steps for Cal Water's study of climate change include:

- Methodological enhancements to reduce some of the uncertainties in the results;
- Development and acquisition of better and more complete data;
- Extending the study to other Cal Water districts;
- Developing a plan to mitigate anticipated climate change impacts on supply; and
- Integrating climate change into the Company's ongoing water supply planning.

Three critical messages emerged from the study:

- Cal Water supplies in the 21st century are likely to be adversely affected by climate change.
- These impacts will vary considerably across districts, depending on geography and source mix. For some districts, the impacts can be significant; for others, little or no impacts are projected.
- The impacts will generally increase over time. Anticipated late-century impacts are forecast to be significantly higher in some districts than impacts at mid-century. Moreover, during the period that climate change is forecast to increasingly constrain supplies, demands are also generally forecast to increase, further exacerbating the adverse impacts on water supply reliability.

Chapter 7
Water Supply Reliability Assessment

This chapter addresses the reliability of the Salinas District's water supplies. Assessment of water supply reliability is complex and dependent upon a number of factors, such as the number of water sources, regulatory and legal constraints, hydrological and environmental conditions, climate change, and expected growth, among others. Based on available historical information and projections of future water uses, regulatory and legal constraints, and hydrological and environmental conditions, including climate change, Cal Water has made its best determination of the future reliability of Salinas District's water supplies.

7.1 Constraints on Water Sources

Well capacities are expected to increase over time as aging wells are taken out of service and replaced with new high capacity wells. Total capacity is also expected to increase as treatment systems are applied to wells with water quality problems.

MCWRA's recent groundwater management efforts such as the Salinas Valley Water Project (SVWP) have reduced overdraft and increased the reliability of the supply. As discussed in Chapter 6, Cal Water is prepared to work with MCWRA and make necessary investments to augment future basin recharge. With these efforts, Cal Water is projecting that, under all hydrologic conditions, its groundwater supply for the District will fully meet future demands.

The Salinas Groundwater Basin is currently unadjudicated. Future basin adjudication or basin management efforts pursuant to SGMA to reduce overdraft and restore the long-term sustainability of the basin could limit Cal Water supply. As described in Chapter 6, Cal Water has evaluated and continues to evaluate other sources of supply to supplement the groundwater source.

An issue affecting sustainable use of wells in the Salinas District is sanding. Sanding can be the result of corrosion of the well screens, which enlarges the openings thereby permitting sand to be drawn into the well. Sand further erodes the well screen and the pump, which causes the holes to get even bigger. Thus, the sanding problem worsens in time. Increases of sand in a well can be an indicator of a possible future casing collapse, or simply result in the well no longer being productive. Sanding also wears out the pump and causes lower efficiency.

Another potential threat to water supply reliability is water quality. The drinking water delivered to customers in the Salinas District meets or surpasses all federal and state

regulations. The U.S. Environmental Protection Agency as authorized by the Federal Safe Drinking Water Act of 1974 sets drinking water standards. A state can either adopt the USEPA standard or set state standards that are more stringent than those set by the federal government.

There are two general types of drinking water standards, Primary and Secondary. Primary Standards are designed to protect public health by establishing Maximum Contamination Levels (MCL) for substances in water that may be harmful to humans. MCLs are established very conservatively for each contaminant and are generally based on health effects which may occur if a person were to drink three liters of the water per day for 70 years. Secondary Standards are based on the aesthetic qualities of the water such as taste, odor, color, and certain mineral content. These standards, established by the State of California, specify limits for substances that may affect consumer acceptance of the water.

Chemicals of concern in the Salinas District include nitrate, volatile organic compounds, MTBE, uranium, and iron and manganese. None of these chemicals is expected to cause significant problems with the quality of water delivered to Cal Water's customers. Wells that test above current Maximum Contamination Level (MCL) for these compounds are either retrofitted with wellhead treatment technologies, or are taken out of service.

Six wells have been placed on inactive status because of non-complying water quality. The most common problem has been nitrates, which can be removed by treatment. Cal Water has installed nitrate treatment on six wells. Another emerging concern is Methyl tert-butyl ether (MTBE), the additive used in gasoline, getting into the groundwater and contaminating well water. Three wells have been put on inactive status because of MTBE. Other wells are being monitored closely to determine whether there are trends showing increases in MTBE. Hexavalent Chromium (Cr(VI)) is an issue in the satellite systems of Las Lomas or Oak Hills Systems due to California State Water Resources Control Board, Division of Drinking Water (DDW), recent new California standard for hexavalent chromium establishing a new MCL. Ion Exchange wellhead treatment plants have been added to one station in Las Lomas and one station in Oak Hills. Cal Water also modified an existing iron and manganese wellhead treatment plant in Las Lomas to treat Cr(VI) though a Reduction-Oxidation-Coagulation-Filtration process. These three treatment plants ensure a continuous and reliable supply of water that meets all Primary and Secondary water quality standards.

A major future water quality concern is arsenic. The new arsenic MCL of 10 parts per billion (ppb) set by the US Environmental Protection Agency became effective in January 2008. There is a possibility that the State of California may set a lower standard of 5 ppb or less, which would impact the availability of several wells for water production. However, at this time, the standard has remained at 10 ppb.

In light of the costs of treatment for removing the constituents discussed, Cal Water will continue to assess both existing and new treatment technologies to determine whether it is more economical to treat a particular well or shut it down and replace it with a newly constructed well in a location with complying water quality and where there does not appear to be any nearby contamination sources.

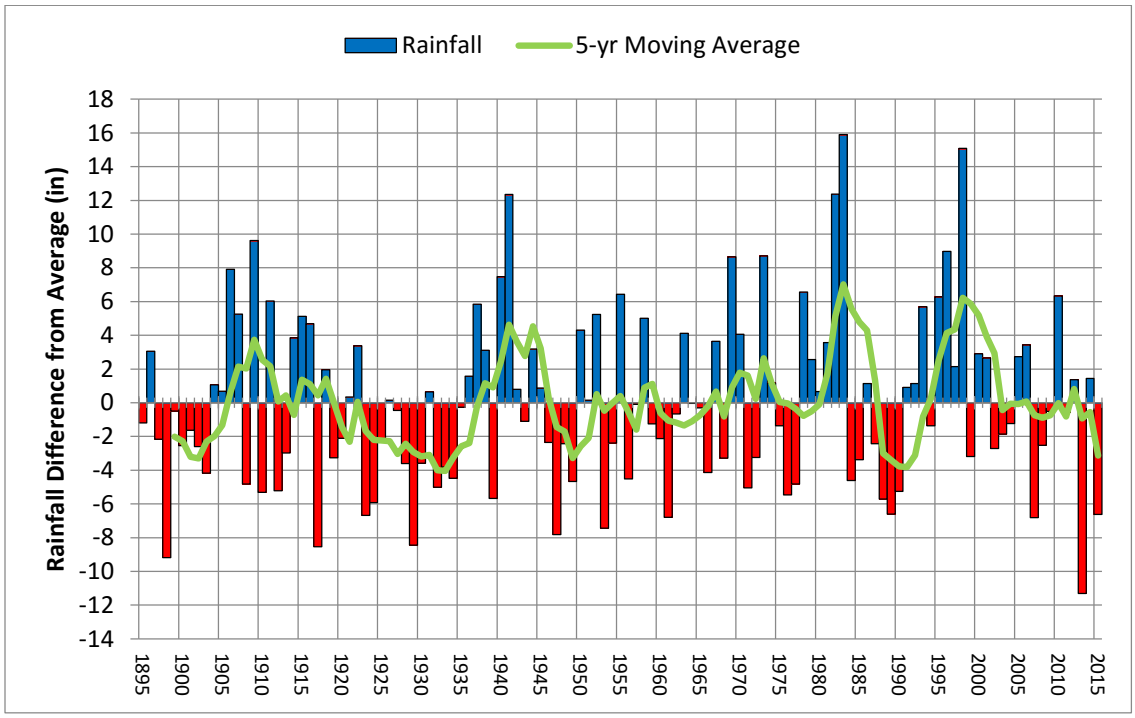
As discussed in Chapter 6, perhaps the key water quality concern for the basin is seawater intrusion.

7.2 Reliability by Type of Year

Figure 7-1 compares annual rainfall to the historic average (15.03 inches). The designation of Base Years for drought planning shown in Table 7-1 below comes from the data underlying this chart.

A normal hydrologic year occurred in 1964 when precipitation was approximately 0.2 percent below the historic average for the period from 1903 to 2015. The driest year occurred in 2013 when the rainfall was approximately 75% percent below average (3.73 inches). This is taken as the single dry year shown in Table 7-1. The multiple dry-water years used are 1988 through 1990.

Figure 7-1. Deviation of Annual Rainfall from Long-Term Average



Source: PRISM Climate Group, Oregon State University, http://prism.oregonstate.edu

Table 7-1 Retail: Basis of Water Year Data			
Year Type	Base Year	Available supplies if year type repeats Agency may complete these columns for volume only, percent only, or both	
		Volume available (AF)	% of avg supply
Average Year	1964	23,154	100%
Single-Dry Year	2013	24,426	
Multiple-Dry Years 1st Year	1988	24,028	
Multiple-Dry Years 2nd Year	1989	24,166	
Multiple-Dry Years 3rd Year	1990	23,959	
NOTES: Available volumes are the maximum volumes across all forecast years in Tables 7-2, 7-3, and 7-4.			

7.3 Supply and Demand Assessment

Water supply and demand patterns change during normal, single dry, and multi dry years. Cal Water has relied on the demand modeling described in Chapter 4 to forecast demands for normal, single dry and multiple dry years. As described above, it is assumed that Cal Water's groundwater supply for the District will be sufficient to serve all forecasted demands resulting in no projected shortages. (This excludes usage reductions that are not directly a function of Cal Water supplies, but are externally-imposed by other entities, such as the 2015 state-mandated cutbacks.)

Table 7-2 shows the projected supply and demand totals for a normal year. The supply totals match those in Table 6-9; the demand totals match Table 4-3.

Table 7-2 Retail: Normal Year Supply and Demand Comparison (AF)					
	2020	2025	2030	2035	2040 *(Opt)*
Supply totals *(autofill fm Table 6-9)*	19,180	19,946	20,906	21,967	23,154
Demand totals *(autofill fm Table 4-3)*	19,180	19,946	20,906	21,967	23,154
Difference	**0**	**0**	**0**	**0**	**0**

Table 7-3 shows the projected supply and demand totals for the single dry year.

Table 7-3 Retail: Single Dry Year Supply and Demand Comparison (AF)					
	2020	2025	2030	2035	2040 (Opt)
Supply totals	20,234	21,042	22,055	23,174	24,426
Demand totals	20,234	21,042	22,055	23,174	24,426
Difference	**0**	**0**	**0**	**0**	**0**

Table 7-4 shows the projected supply and demand totals for the multiple dry years.

Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison (AF)						
		2020	2025	2030	2035	2040 (Opt)
First year	Supply totals	19,904	20,699	21,696	22,797	24,028
	Demand totals	19,904	20,699	21,696	22,797	24,028
	Difference	**0**	**0**	**0**	**0**	**0**
Second year	Supply totals	20,018	20,817	21,820	22,927	24,166
	Demand totals	20,018	20,817	21,820	22,927	24,166
	Difference	**0**	**0**	**0**	**0**	**0**
Third year	Supply totals	19,847	20,639	21,634	22,731	23,959
	Demand totals	19,847	20,639	21,634	22,731	23,959
	Difference	**0**	**0**	**0**	**0**	**0**

7.4 Regional Supply Reliability

Cal Water coordinates on an ongoing basis with all relevant agencies in the region to optimize the use of regional water supplies. This includes the City of Salinas and MCWRA as well as private entities with which Cal Water can collaborate to protect and enhance local groundwater resources.

Cal Water also has its own aggressive conservation program that has and will continue to reduce per-capita usage and therefore demands on critical water sources. Cal Water is committed to helping its customers use water efficiently and has developed a range of water conservation programs to support this goal. To ensure that it is providing the right mix of programs in the most cost-effective manner possible, Cal Water routinely conducts comprehensive conservation program analysis and planning. This is done on a five-year cycle in tandem with the UWMP. Cal Water's current Conservation Master Plan provides the basis for the information on the implementation of and expected water savings from Demand Management Measures (DMMs) presented in Chapter 9. A copy of the Conservation Master Plan is provided in Appendix L. Cal Water also monitors and supports the goals of the Greater Monterey County IRWMP. These goals include:

- Improve water supply reliability and protect groundwater and surface water supplies.
- Protect and improve surface, groundwater, estuarine, and coastal water quality, and ensure the provision of high-quality, potable, affordable drinking water for all communities in the region.
- Promote regional communication, cooperation, and education regarding water resource management.

- Adapt the region's water management approach to deal with impacts of climate change using science-based approaches, and minimize the regional causal effects.

Chapter 8
Water Shortage Contingency Planning

This chapter describes the water shortage contingency plan for the Salinas District. The water shortage contingency plan includes the stages of response to a water shortage, such as a drought, that occur over a period of time, as well as catastrophic supply interruptions which occur suddenly. The primary objective of the water shortage contingency plan is to ensure that the District has in place the necessary resources and management responses needed to protect health and human safety, minimize economic disruption, and preserve environmental and community assets during water supply shortages and interruptions.

Rule 14.1, as filed with the California Public Utilities Commission (CPUC), serves as Cal Water's Water Shortage Contingency Plan (WSCP) and includes Mandatory Staged Restrictions of Water Use. In the event that more stringent measures are required, Cal Water may request the addition of Schedule 14.1 which includes Staged Mandatory Water Use Reductions.

On April 1, 2016, Cal Water filed its current Schedule 14.1 with the California Public Utilities Commission (CPUC).[9] The Schedule lays out the staged mandatory reductions and drought surcharges associated with Cal Water's Water Shortage Contingency Plan. This filing is consistent with Resolution W-5034, adopted by the Commission on April 9, 2015, ordering compliance with requirements of the State Water Resources Control Board (SWRCB).

Schedule 14.1 is an extension of the Water Shortage Contingency Plan provided in Rule 14.1. The information presented in this chapter, is based on the current versions of both Rule 14.1 and Schedule 14.1 which are based, in part, on the specific SWRCB requirements associated with the Governor's Executive Order requiring statewide cutbacks to address the unprecedented drought.

8.1 Stages of Action

Table 8-1 defines the four stages of action in Cal Water's WSCP.

[9] Schedule 14.1, along with the underlying Cal Water Rule 14.1 are included as Appendix J.

Table 8-1 Retail: Stages of WSCP		
Stage	Complete One or Both	
	Percent Supply Reduction[1]	Water Supply Condition
	numerical value as percent	*narrative description*
1	Up to 10%	Minimal shortage
2	Up to 20%	Moderate shortage
3	Up to 35%	Severe shortage
4	Greater than 35%	Critical shortage
[1] One stage in the WSCP must address a water shortage of 50%.		

8.2 Prohibitions on End Uses

Except where necessary, to address an immediate health or safety need, or to comply with a term or condition in a permit issued by a state or federal agency, customers are prohibited, at all times, from using potable water for the following actions, as each is declared a non-essential, wasteful use of water:

1. Use of potable water through a broken or defective plumbing fixture or irrigation system when Cal Water has notified the customer in writing to repair the broken or defective plumbing fixture or irrigation system, and the customer has failed to effect such repairs within seven (7) business days of receipt of such notice;

2. The application of potable water to landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures; and,

3. The use of a hose that dispenses potable water to wash vehicles, including cars, trucks, buses, boats, aircraft, and trailers, whether motorized or not, except where the hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use.

Restrictions of water use by Stage of the Water Shortage Contingency Plan are included in Table 8-2.

Table 8-2 Retail: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
1	Landscape - Limit landscape irrigation to specific days	Limited to no more than 3 days per week	Yes
1	Landscape - Limit landscape irrigation to specific times	Limited to 8 am and 6pm	Yes
1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Must be repaired within 5 business days	Yes
1	Landscape - Restrict or prohibit runoff from landscape irrigation		Yes
1	Landscape - Other landscape restriction or prohibition	Prohibit application of potable water to outdoor landscapes within 48 hours of measurable rainfall.	Yes
1	Other - Require automatic shut off hoses		Yes
1	Other - Prohibit use of potable water for washing hard surfaces		Yes
1	Other	Limits filling ornamental lakes or ponds; prohibit use of potable water in a water feature except where the water is recirculated	Yes
2	Landscape - Limit landscape irrigation to specific days	Limited to no more than 3 days per week	Yes
2	Landscape - Limit landscape irrigation to specific times	Limited to 8 am and 6pm	Yes
2	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Must be repaired within 3 business days	Yes
2	Landscape - Restrict or prohibit runoff from landscape irrigation		Yes
2	Landscape - Other landscape restriction or prohibition	Prohibits irrigation of ornamental turf on public street medians with potable water; prohibit application of potable	Yes

Table 8-2 Retail: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
		water to outdoor landscapes within 48 hours of measurable rainfall.	
2	CII - Lodging establishment must offer opt out of linen service		Yes
2	CII - Restaurants may only serve water upon request		Yes
2	Other - Require automatic shut off hoses		Yes
2	Other - Prohibit use of potable water for washing hard surfaces		Yes
2	Other	Limits filling ornamental lakes or ponds; prohibit use of potable water in a water feature except where the water is recirculated	Yes
3	Landscape - Limit landscape irrigation to specific days	Limited to no more than 2 days per week	Yes
3	Landscape - Limit landscape irrigation to specific times	Limited to 8 am and 6pm	Yes
3	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Must be repaired within 2 business days	Yes
3	Landscape - Restrict or prohibit runoff from landscape irrigation		Yes
3	Landscape - Other landscape restriction or prohibition	Prohibits irrigation of ornamental turf on public street medians with potable water; prohibit application of potable water to outdoor landscapes within 48 hours of measurable rainfall.	Yes
3	CII - Lodging establishment must offer opt out of linen service		Yes

Table 8-2 Retail: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
3	CII - Restaurants may only serve water upon request		Yes
3	Other - Require automatic shut off hoses		Yes
3	Other - Prohibit use of potable water for washing hard surfaces	Prohibits use of potable water for street cleaning with trucks except for initial wash-down for construction purposes if street sweeping is not feasible	Yes
3	Other	Limits filling ornamental lakes or ponds; prohibit use of potable water in a water feature except where the water is recirculated	Yes
3	Other - Prohibit use of potable water for construction and dust control	Prohibited unless no other method or source of water can be used	Yes
4	Landscape - Prohibit all landscape irrigation	Prohibited except with hand-held bucket nozzle to maintain trees and shrubs.	Yes
4	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Must be repaired within 1 business day	Yes
4	Landscape - Restrict or prohibit runoff from landscape irrigation		Yes
4	CII - Lodging establishment must offer opt out of linen service		Yes
4	CII - Restaurants may only serve water upon request		Yes
4	Other - Require automatic shut off hoses		Yes
4	Other - Prohibit use of potable water for washing hard surfaces	Prohibits use of potable water for street cleaning with trucks	Yes

Table 8-2 Retail: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
4	Other	Limits filling ornamental lakes or ponds; prohibit use of potable water in a water feature except where the water is recirculated	Yes
4	Other - Prohibit use of potable water for construction and dust control	No exceptions	Yes

8.3 Penalties, Charges, Other Enforcement of Prohibitions

In accordance with Rule 14.1, Cal Water is authorized to take the following actions to enforce restrictions of water use that are in effect:

First Violation: Cal Water shall provide the customer with a written notice of violation.

Second Violation: If Cal Water verifies that the customer has used potable water for non-essential, wasteful uses after having been notified of the first violation, Cal Water shall provide the customer with a second written notice of violation and is authorized to install a flow-restricting device on the customer's service line.

If Schedule 14.1 is implemented, Cal Water is authorized to take the following actions when its personnel verify a customer is using potable water for non-essential, wasteful uses.

First Violation: Cal Water shall provide the customer with a written notice of violation. In addition, Cal Water is authorized to take the following actions:

A. If the customer currently receives service through a metered connection, install a real-time water measurement device on the customer's service line and provide the customer with access to information from the device. The cost of the device, including installation and ongoing operating costs, may be billed to the customer, and nonpayment may result in discontinuance of service.

B. If the customer does not currently receive service through a metered connection, install a water meter on the customer's service line, charge the customer for water

use pursuant to Cal Water's metered service tariffs and rules, and install a real-time water measurement device on the customer's service line and provide the customer with access to information from the device. The cost of the device, including installation and ongoing operating costs, may be billed to the customer, and nonpayment may result in discontinuance of service.

Second Violation: If Cal Water verifies that the customer has used potable water for non-essential, wasteful uses after having been notified of the first violation, Cal Water shall provide the customer with a second written notice of violation. In addition to the actions prescribed under the first violation above, Cal Water is authorized to take the following actions:

A. Apply the following waste of water penalties, which are in addition to any other charges authorized by this Schedule or other Cal Water tariffs.

   i. If Stage 1 is in effect, $25
   ii. If Stage 2 is in effect, $50
   iii. If Stage 3 is in effect, $100
   iv. If Stage 4 is in effect, $200

B. At its sole discretion, waive the waste of water penalty if the customer participates in a water use evaluation provided by Cal Water and/or provides documentation to Cal Water proving that a drip irrigation system, micro spray irrigation system, high-efficiency sprinkler system, or properly programmed smart irrigation controller has been installed, after a notice of violation was delivered, and is in use at the customer's service address.

Third Violation: If Cal Water verifies that the customer has used potable water for non-essential, wasteful uses after having been notified of the second violation, Cal Water shall provide the first and second violations above, Cal Water is authorized to take the following actions:

A. Apply the following waste of water penalties, which are in addition to any other charges authorized by this Schedule or other Cal Water tariffs.

   i. If Stage 1 is in effect, $50
   ii. If Stage 2 is in effect, $100
   iii. If Stage 3 is in effect, $200
   iv. If Stage 4 is in effect, $400

B. At its sole discretion, waive the waste of water surcharge if the customer participates in a water use evaluation provided by Cal Water and/or provides documentation to

Cal Water proving that a drip irrigation system, micro spray irrigation system, high-efficiency sprinkler system, or properly programmed smart irrigation controller has been installed, after notice of violations have been delivered, and is in use at the customer's service address.

Fourth Violation: If Cal Water verifies that the customer has used potable water for non-essential, wasteful uses after having been notified of the third violation, Cal Water shall provide the customer with a fourth written notice of violation. In addition to actions set forth in previous violations prescribed above, Cal Water is authorized to install a flow-restricting device on the customer's service line.

Egregious Violations: Notwithstanding the foregoing framework for penalties, customers who Cal Water has verified are egregiously using potable water for non-essential, wasteful uses are subject to having a flow- restricting device installed on their service line. After providing the customer with one notice of egregious violation, either by direct mail or door hanger, which documents the egregious use of potable water for non-essential, wasteful uses and explains that failure to correct the violation may result in the installation of a flow-restricting device on the customer's service line, Cal Water is authorized to install a flow-restricting device on the customer's service line.

DROUGHT SURCHARGES

Cal Water may elect to implement actions such as water budgets with associated surcharges through the implementation of Schedule 14.1. An example of such a program is included in Appendix J.

8.4 Consumption Reduction Methods by Agencies

Table 8-3 Retail: Stages of WSCP - Consumption Reduction Methods

Stage	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference *(optional)*
2	Expand Public Information Campaign	
2	Offer Water Use Surveys	Offered as part of standard conservation program. Will expand as needed to achieve additional savings.
2	Provide Rebates or Giveaways of Plumbing Fixtures and Devices	Offered as part of standard conservation program. Will expand as needed to achieve additional savings.
2	Provide Rebates for Landscape Irrigation Efficiency	Offered as part of standard conservation program. Will expand as needed to achieve additional savings.

Table 8-3 Retail: Stages of WSCP - Consumption Reduction Methods		
Stage	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference *(optional)*
2	Decrease Line Flushing	
2	Reduce System Water Loss	
2	Increase Water Waste Patrols	
2	Other	Mandatory water budgets and banking--Water budgets will be based on a customer's consumption during a historical base period and will include a percentage reduction designed to meet necessary water-use reductions.
2	Implement or Modify Drought Rate Structure or Surcharge	Drought surcharges charged to customers for each unit of water used over the established water budget for the billing period. For Stage 2 surcharges are two times the highest residential tier rate, with exceptions discussed in Section 8.3
3	Expand Public Information Campaign	
3	Offer Water Use Surveys	Offered as part of standard conservation program. Will expand as needed to achieve additional savings.
3	Provide Rebates or Giveaways of Plumbing Fixtures and Devices	Offered as part of standard conservation program. Will expand as needed to achieve additional savings.
3	Provide Rebates for Landscape Irrigation Efficiency	Offered as part of standard conservation program. Will expand as needed to achieve additional savings.
3	Decrease Line Flushing	
3	Reduce System Water Loss	
3	Increase Water Waste Patrols	
3	Other	Mandatory water budgets and banking
3	Implement or Modify Drought Rate Structure or Surcharge	Drought surcharges charged to customers for each unit of water used over the established water budget for the billing period.
4	Expand Public Information Campaign	

Table 8-3 Retail: Stages of WSCP - Consumption Reduction Methods		
Stage	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference *(optional)*
4	Offer Water Use Surveys	Offered as part of standard conservation program. Will expand as needed to achieve additional savings.
4	Provide Rebates or Giveaways of Plumbing Fixtures and Devices	Offered as part of standard conservation program. Will expand as needed to achieve additional savings.
4	Provide Rebates for Landscape Irrigation Efficiency	Offered as part of standard conservation program. Will expand as needed to achieve additional savings.
4	Decrease Line Flushing	
4	Reduce System Water Loss	
4	Increase Water Waste Patrols	
4	Other	Mandatory water budgets and banking
4	Other	Mandatory water budgets and banking
4	Implement or Modify Drought Rate Structure or Surcharge	Drought surcharges charged to customers for each unit of water used over the established water budget for the billing period.
NOTES: The actions included may be implemented through a combination of Rule 14.1 and Schedule 14.1 and would be evaluated based on specific need.		

8.5 Determining Water Shortage Reductions

All customers in the District are metered. The metered demands will be used to monitor reductions that result from actions taken by Cal Water when implementing its WSCP.

8.6 Revenue and Expenditure Impacts

In 2008 the CPUC allowed for the creation of a Water Revenue Adjustment Mechanism (WRAM) and Modified Cost Balancing Accounts (MCBA). The goals of the WRAM and MCBA are to sever the relationship between sales and revenue to remove the disincentive to reduce water use. The WRAM and MCBA are designed to be revenue neutral in order to ensure that both the utility and ratepayers are neither harmed nor benefitted.

During the current drought, the CPUC authorized a memorandum account through Resolution W-4976 to track incremental drought-related costs and waste of water

penalties which may be recovered through rates if deemed appropriate by the Commission.

8.7 Resolution or Ordinance

Cal Water is an investor-owned water utility that is regulated by the California Public Utilities Commission (CPUC). As such, it does not have the authority to adopt resolutions or ordinances. As described above, Rule 14.1, as filed with the California Public Utilities Commission (CPUC), serves as Cal Water's Water Shortage Contingency Plan and includes Mandatory Staged Restrictions of Water Use. In the event that more stringent measures are required, Cal Water may request the addition of Schedule 14.1 which includes Staged Mandatory Water Use Reductions. Cal Water will work with local planning and enforcement departments to ensure consistency with local resolutions and ordinances.

8.8 Catastrophic Supply Interruption

Cal Water has an Emergency Response Plan (ERP) in place that coordinates the overall company response to a disaster in any or all of its districts. In addition, the ERP requires each District to have a local disaster plan that coordinates emergency responses with other agencies in the area.

Cal Water also inspects its facilities annually for earthquake safety. To prevent loss of these facilities during an earthquake, auxiliary generators and improvements to the water storage facilities have been installed as part of Cal Water's annual budgeting and improvement process.

Cal Water has generators installed at key well sites as well as booster and pump storage facilities. These generators are routinely tested, maintained, and replaced when needed.

8.9 Minimum Supply Next Three Years

Table 8-4 provides estimates of total supply volumes that would be produced if the hydrology of the multi-year drought period discussed in Chapter 7 were to occur in the immediate future. These volumes are equal to the projected 2020 supplies in Table 7-4. Since District near-term supplies over a multi-year dry period are projected to be at least sufficient to serve demands, it is likely that current supply sources could produce more water. Cal Water does not have sufficient information to estimate how much more.

Table 8-4 Retail: Minimum Supply Next Three Years (AF)			
	2016	2017	2018
Available Water Supply	19,904	20,018	19,847

Chapter 9
Demand Management Measures

This chapter provides a summary of past and planned demand management measure (DMM) implementation in the Salinas District, as well as an overview of the expected water savings and projected compliance with the Water Conservation Act of 2009 (SB X7-7).

This chapter contains the following sections:

9.1 Demand Management Measures for Wholesale Agencies

9.2 Demand Management Measures for Retail Agencies

9.3 Implementation over the Past Five Years

9.4 Planned Implementation to Achieve Water Use Targets

9.5 Members of the California Urban Water Conservation Council

9.1 Demand Management Measures for Wholesale Agencies

Because the Salinas District is a retail water supplier, this section does not apply.

9.2 Demand Management Measures for Retail Agencies

Cal Water centrally administers its conservation programs for its 24 districts. For purposes of this section, these programs have been grouped in accordance with the DMM categories in Section 10631(f) of the UWMP Act. These categories are:

(i) Water waste prevention ordinances
(ii) Metering
(iii) Conservation pricing
(iv) Public education and outreach
(v) Distribution system water loss management
(vi) Water conservation program coordination and staffing support, and
(vii) Other demand management measures

Following are descriptions of the conservation programs Cal Water operates within each of these DMM categories.

9.2.1 Water Waste Prevention Ordinances

Because of its investor owned status Cal Water enforcement of water use restrictions is authorized by the CPUC through Rule 14.1 or Schedule 14.1. Restrictions may also be regulated by ordinances passed by the local governments in each community served. Cal Water has worked with municipalities to pass ordinances and coordinate activities. Cal Water will continue this effort on an ongoing basis. The City of Salinas and the Counties of Monterey and Santa Cruz have passed water conservation ordinances, which are included in Appendix J.

Due to worsening drought conditions, Cal Water filed Schedule 14.1 with the CPUC in the spring of 2015 which went into effect on June 1, 2015. Cal Water's Schedule 14.1 filing, which applies to both residential and non-residential customers, is responsive to Governor Brown's emergency drought declaration and executive order requiring a statewide 25% reduction in urban potable water use. It also complies with regulations adopted by the State Water Resources Control Board (State Board) and the CPUC to achieve that reduction by the end of February 2016. Schedule 14.1 puts measures in place to enable Cal Water to enforce the water-use prohibitions set by the State Board, including:

- Applying water to outdoor landscapes that causes runoff onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures
- Using a hose to wash motor vehicles unless the hose is fitted with a shut-off nozzle or device that causes it to cease dispensing water immediately when not in use
- Applying water to driveways and sidewalks
- Using water in a fountain or other decorative water feature, except where the water is part of a recirculating system
- Applying water to outdoor landscapes during and within 48 hours after measurable rainfall
- Using potable water to irrigate outside of new construction without drip or microspray systems
- Using potable water on street medians
- Filling or refilling ornamental lakes or ponds except to sustain existing aquatic life

Additionally, Schedule 14.1 requires that:

- Customers must fix leaks within their control within five business days of notification
- Hotel/motel operators must provide option to not have towels or linens laundered daily during a guest's stay, and must provide clear notice of this option in easy-to-understand language

- Restaurants and other eating and drinking establishments may only serve drinking water upon request

With the approval of the Schedule 14.1 filing, beginning June 1, 2015, individual customers in each Cal Water district were provided water budgets based upon their water use each month in 2013 minus the state-mandated reduction for the Salinas District of 16%. If a customer used less than his or her water budget, the unused water was carried forward, similar to rollover minutes on a cell phone plan. Water used in excess of the monthly budget was subject to a drought surcharge. The surcharge was discounted for customers on Cal Water's Low-Income Rate Assistance (LIRA) program. To help with compliance, the customer's monthly bill showed his or her water budget for the following month. Customers' water use history back to 2011 and their water budgets were also available online beginning in June of 2015.

Cal Water's Schedule 14.1 filing is included as Appendix J of this UWMP.

9.2.2 Metering

All service connections within the Salinas District are metered. Meters are read monthly and routinely maintained and calibrated. Customers are billed monthly based on their metered water use.

Cal Water is also piloting automatic meter reading (AMR) and advanced metering infrastructure (AMI) in several of its districts. AMI may be used by Cal Water in the future to detect and alert households of leaks and other possible problems as well as to provide customers with tailored water use information to help them use water more efficiently.

9.2.3 Conservation pricing

As an investor owned utility, Cal Water rates and charges are reviewed and authorized by the CPUC every three years. Starting in 2008 Cal Water adopted tiered rate designs for single family residential service. Uniform volumetric rate designs are employed by Cal Water for other water service classes. Current volumetric rates by class of service within Salinas District are provided in Table 9-1.

Table 9-1: Volumetric Water Rates by Class of Service ($/CCF)

Class of Service	Tier 1 (1-6 ccf)	Tier 2 (7-17 ccf)	Tier 3 (18+ ccf)	All units of water
Single Family	$2.46	$2.59	$2.90	
Non Residential				$2.56

Per the Memorandum of Understanding Regarding Urban Water Conservation in

California (MOU), conservation pricing provides economic incentives to customers to use water efficiently via a volumetric water rate. The MOU considers uniform, seasonal, tiered (block), and allocation-based rate designs as each being potentially consistent with conservation pricing, provided that either (1) 70% or more of total annual revenue is derived from the volumetric component of the rate design or (2) the proportion of total revenue from the volumetric component of the rate design equals or exceeds the long-run incremental cost of providing water service, or (3) the utility's metering technology, rate structure, and customer communication programs satisfy various requirements specified by the MOU.

The Salinas District's rate structure is not currently in compliance with any of the three compliance options of the Urban MOU's definition of conservation pricing. Urban MOU BMP compliance reports are provided in Appendix L. The District's rates are established by the California Public Utilities Commission (CPUC) through General Rate Cases every three years. The District is bound by the General Rate Case decisions and cannot make changes to its rate design or level without CPUC approval.

9.2.4 Public Education and Outreach

Cal Water's public outreach program is divided into four components, as follows:

Residential Customer Assistance – This category provides tailored assistance to residential customers through home water surveys and monthly water use reports. It provides assistance to residential customers wanting to reduce their indoor and outdoor water uses. While available to all residential customers, marketing of home water surveys is generally focused on high use residential customers.

Non-Residential Customer Assistance – This category provides tailored assistance to commercial customers through commercial water surveys, monthly landscape reports to large landscape customers, and large landscape water use surveys. It provides assistance to commercial customers wanting to reduce their use of water for sanitation, hygiene, process, and landscape purposes.

Public Information and School Education – Cal Water's public information program provides general information on the need for and value and methods of water conservation through multiple media outlets, including its website, direct mail, external print media, and radio. Cal Water's school education program includes the Cal Water H2O Challenge, a project-based learning competition for grades 4-6, Cal Water Town, an interactive online learning tool, and general information and learning materials for students and teachers.

Rebate Program Information and Marketing – Through its website, bill inserts, newsletters, and radio and print media, Cal Water advertises and markets a variety of

conservation rebate programs, including rebate programs for high-efficiency toilets, urinals, and clothes washers, and irrigation equipment and landscape efficiency improvements.

9.2.5 Programs to Assess and Manage Distribution System Real Loss

Per the MOU, Cal Water annually quantifies the District's volume of apparent and real water loss. Cal Water's conservation staff have received training in the AWWA water audit method and component analysis process and have completed water balances for each Cal Water district using AWWA's water audit software. For the five-year period 2011-2015, apparent and real water loss in the Salinas District averaged 1,524 AF, or approximately 9 percent of total production.

In addition to its routine and planned system maintenance and water loss reporting, Cal Water is planning to implement a lift-and-shift sonic data logger leak detection program in the District starting in 2017. The lift-and-shift program will survey up to one-third of main miles annually in three shifts. Each leak detection shift will last approximately 80 days. Lift-and-shift sonic data logging technology will enable Cal Water to quickly and efficiently locate leaks in one part of the water distribution network and then redeploy the equipment to another part of the network. Staff will review sound files from the loggers for potential leak warnings and discuss this information with District management, who can then assign work orders for repair crews to investigate and repair leaks. Cal Water conservatively estimates the lift-and-shift program will reduce real water loss in the District by up to 294 AFY – enough water for about 900 households. Additional potential benefits of the program include reduced excavation of streets, less staff overtime spent responding to and repairing catastrophic main breaks, and improvement to the best management practices of the valve maintenance program. This program was submitted as part of Cal Water's 2015 General Rate Case with the CPUC and is subject to CPUC approval prior to implementing.

9.2.6 Water Conservation Program Coordination and Staffing Support

Because of its status as an investor owned utility, conservation program staffing positions must be approved by the CPUC through its General Rate Case every three years. Currently authorized conservation program staffing consists of five full-time positions, which include:

- One Conservation Program Manager
- One Conservation Program Analyst
- One Landscape Program Analyst
- Two Conservation Program Coordinators

These five staff positions manage all aspects of Cal Water's conservation programs deployed across 24 separate districts serving a combined population of about 2 million through 470,000 service connections. Staffing constraints have been one of the primary challenges Cal Water has faced in expanding the scope and reach of its conservation programs throughout its service districts. To ensure adequate management and oversight of the expansion and utilization of its conservation programs, Cal Water is proposing in its current General Rate Case to add three additional Conservation Program Coordinator positions. Proposed staffing is summarized in Table 9-2. If approved, total staffing level would increase from 5 to 8 FTE positions. While this would still be below the average for conservation programs of similar size and scope operated by other water utilities, it would be a substantial improvement over Cal Water's current conservation program staffing levels.

Table 9-2: Planned Conservation Program Staffing

Staff Position	Responsibilities	Position Status
Conservation Program Manager	Long-term program planning and implementation; program budgeting and oversight; staff oversight and management; contracting and oversight of outside services	Existing
Conservation Program Coordinator	Management and oversight of conservation programs in Cal Water districts	2 Existing 3 Proposed
Conservation Program Analyst	Program analysis and reporting, including but not limited to preparation of reports related to CPUC requirements, urban water management plans, BMP compliance reports, and SB X7-7 compliance reports	Existing
Landscape Program Analyst	Analysis and tracking of landscape program implementation and performance; coordination of landscape program rollouts; GIS/GPS management; assist regional conservation program coordinators with management/oversight of landscape programs	Existing

9.2.7 Other Demand Management Measures

In addition to the DMM programs described above, Cal Water operates rebate, give-away, and direct installation programs aimed at plumbing fixture replacement and irrigation equipment and landscape efficiency improvements. Following are brief descriptions of each of these DMMs.

MaP Premium and Non-Premium Toilet Replacement – This program replaces old toilets with MaP certified high-efficiency toilets. Financial rebates, direct installation, and direct distribution are used to deliver toilets to customers. For residential customers, MaP premium certified toilets which have greater water savings potential are eligible for a $100 rebate while the rebate for MaP non-premium toilets is $50. For commercial customers, a rebate of $100 is available for valve-type toilets flushing 1.28 gallons or less and EPA WaterSense labeled tank-type toilets. Cal Water centrally administers the program. This program is available to all residential and non-residential customers. Cal Water markets the program through direct mail, print media, bill stuffers, and its website. Where advantageous, Cal Water partners with local or regional agencies and community organizations to offer the program.

Urinal Valve and Bowl Replacement – This program replaces old urinals with high-efficiency urinals meeting the new 0.125 gallon per flush water use standard adopted by the California Energy Commission in April 2015. Financial rebates of up to $150 are available to customers. The program targets offices and public buildings receiving significant foot traffic. Cal Water centrally administers the program. While this program is available to all non-residential customers, marketing focuses on prime targets, such as restaurants and high-density office buildings. Cal Water markets the program through direct mail, print media, bill stuffers, and its website.

Clothes Washer Replacement – This program provides customer rebates up to $150 for residential and up to $200 for non-residential high-efficiency clothes washers. The program targets single-family households, multi-family units, multi-family common laundry areas, and commercial coin-op laundries. Cal Water centrally administers the program, and markets the program through direct mail, print media, bill stuffers, and its website. This program is available to all residential and non-residential customers. Where advantageous, Cal Water partners with local or regional agencies to offer the program.

Residential Conservation Kit Distribution – This program offers Cal Water residential customers conservation kits featuring a range of water-saving plumbing retrofit fixtures. Kits are available at no charge to customers, who can request them via Cal Water's website, via mail, or by contacting or visiting their District. Each kit includes the following items: high-efficiency showerheads, kitchen faucet aerator, bathroom faucet aerators, full-stop hose nozzle, and toilet leak detection tablets. Cal Water centrally administers

this program as part of a company-wide program operated in each of its districts. This program is available to all residential customers. Cal Water markets the program through direct mail, print media, bill stuffers, and through its website.

Smart Controllers Rebates/Vouchers – This program targets residential and non-residential customers with high landscape water use. The program offers financial incentives up to $125 for residential controllers and up to $25 per station for commercial-grade controllers to either the customer or contractor for proper installation of the Smart Controller at customer sites. The landscape contractor has the direct relationship with customers and is typically the entity customers listen to when making landscape and irrigation decisions. The program educates contractors about the customer benefits of Smart Controllers along with proper installation of the devices. This program is offered to all residential and non-residential customers. Cal Water markets the program through direct mail, print media, bill stuffers, and its website.

High Efficiency Irrigation Nozzle Web Vouchers/Rebates – Water efficient sprinkler nozzles (popup and rotating) and integrated pressure-regulated spray bodies use significantly less water than a standard sprinkler head by distributing water more slowly and uniformly to the landscape. In addition to reducing water use, water directed from these nozzles reduces run-off onto streets and sidewalks with a more directed flow. Customers are able to obtain the nozzles and spray bodies either directly through Cal Water or via a web-voucher program. Restrictions on the number of nozzles individual customers may receive vary by customer class and/or landscape size. Cal Water centrally administers this program as part of a company-wide program operated in most of its districts.

Turf Buy-Back – This program offers customers a $1 per square foot rebate to replace turf with qualified drought-tolerant landscaping. Customer applications are screened to ensure program requirements are met, including before and after photos of the retrofitted landscape area. Turf replacement rebates were offered in a subset of Cal Water districts starting in 2014 and offered across all districts starting in 2015 as a drought response measure. Governor Brown's Executive Order B-29-15 calls on the Department of Water Resources to lead a statewide initiative, in partnership with local agencies, to replace 50 million square feet of lawns and ornamental turf with drought tolerant landscapes.

Table 9-3 summarizes the DMMs currently available to Salinas District customers.

Table 9-3: Cal Water DMMs Available to Salinas District Customers			
1. Plumbing Fixture Replacement	Customer Class Eligibility		
Rebates	SFR	MFR	COM
MaP Premium Toilet	✓	✓	✓
MaP Non-Premium Toilet	✓	✓	✓
Urinal Bowl & Valve (< 0.125 gal)			✓
Clothes Washer (In Unit)	✓	✓	
Clothes Washer (Commercial)		✓	✓
Direct Install			
MaP Premium Toilet	✓	✓	
MaP Non-Premium Toilet			
Urinal Valve (< 0.125 gal)			
Direct Distribution			
MaP Premium Toilet	✓	✓	
Conservation Kits (showerheads, aerators)	✓		✓
2. Irrigation Equipment/Landscape Upgrades			
Rebates/Vouchers			
Smart Irrigation Controller	✓	✓	✓
High Efficiency Irrigation Popup Nozzle	✓	✓	✓
High Efficiency Irrigation Rotating Nozzle	✓	✓	✓
High Efficiency Irrigation Spray Body		✓	✓
Turf Buy-Back	✓	✓	✓
Direct Distribution			
Smart Irrigation Controller		✓	✓
3. Residential Customer Assistance			
Residential Water Survey	✓	✓	
4. Non-Residential Customer Assistance			
Commercial Water Use Surveys			✓
Monthly Water Use Report			✓
Large Landscape Water Use Survey			✓
Note: MaP Premium toilets: flush vol <= 1.1 gallons; MaP Non-Premium: flush vol <= 1.28 gallons.			

9.3 Implementation over the Past Five Years

Implementation of customer DMMs over the past five years is summarized in Table 9-4. Estimated annual and cumulative water savings from customer DMM implementation is shown in the last row of the table. The water savings estimates are only for the customer DMMs listed in Table 9-3. They do not include water savings from water waste prevention ordinances, conservation pricing, general public information, or distribution system water loss management DMMs. Estimated water savings shown in Table 9-4 were calculated with the Alliance for Water Efficiency's Water Conservation Tracking Model.

Significant additional reductions in water demand were achieved in 2015 in response to the District's drought response measures, including its public information campaigns to save water and its Schedule 14.1 water use restrictions, water budgets, and drought surcharges that went into effect June 1, 2015. Relative to its 2013 reference year under the State Board's Emergency Regulation for Statewide Urban Water Conservation, water demand between June and December 2015 decreased by 25.5 percent. Per capita potable water use in 2015 was 108 GPCD compared to the District's SB X7-7 2015 interim water use target of 135 GPCD. As discussed in Chapter 5 and the next section, for purposes of SB X7-7 compliance, the District has formed a regional alliance with Cal Water's other Central Coast water district. Per capita potable water use in 2015 for the regional alliance was 106 GPCD compared to the regional alliance's 2015 interim water use target of 135 GPCD.

Table 9-4: Implementation of Customer DMMs: 2011-2015		
1. Plumbing Fixture Replacement	2011 – 2015 Total	Average Annual
Toilets & Urinals (number distributed)	5,813	1,163
Clothes Washers (number distributed)	1,328	266
Conservation Kits (number distributed)	4,421	884
2. Irrigation Equipment/Landscape Upgrades		
Smart Controllers (number distributed)	19	4
Nozzles & Spray Bodies (number distributed)	2,424	485
Turf Buy-Back (sq ft removed)	19,285	3,857
3. Residential Customer Assistance		
Surveys/Audits (homes receiving)	134	27
4. Non-Residential Customer Assistance		
Surveys/Audits (sites receiving)	11	2
Large Landscape Reports (sites receiving)	465	93
Estimated Water Savings (AF)	**821**	**164**
Note: Estimated water savings shown in the table are only for the 2011-2015 period. Water savings from customer DMMs implemented between 2011 and 2015 will continue after 2015 and last for the useful life of each DMM.		

Annual expenditure for implementation of customer DMMs over the past five years is summarized in Table 9-5. The table highlights expenditures from 2011 through 2015 for administrative, research, planning, program, and public information and school education.

Table 9-5: Annual DMM Expenditure: 2011-2015		
Expenditure Category	2011 – 2015 Total	Average Annual
Admin, R&D, planning	$450,395	$90,079
Program expenditures & incentives	$2,086,934	$417,387
Public information & school education	$229,251	$45,850
Total	**$2,766,580**	**$553,316**

9.4 Planned Implementation to Achieve Water Use Targets

Planned implementation of customer and water loss management DMMs for the period 2016 to 2020 are summarized in Table 9-6. Estimated annual and cumulative water

savings from customer and water loss management DMM implementation is shown in the last two rows of the table. The water savings estimates are only for the customer DMMs listed in Table 9-3 plus the leak detection program Cal Water has proposed to start in 2017. They do not include potential water savings from water waste prevention ordinances, conservation pricing, or general public information and school education DMMs. Estimated water savings shown in Table 9-6 were calculated with the Alliance for Water Efficiency's Water Conservation Tracking Model.

In addition to the DMMs shown in Table 9-6, Cal Water will continue to fully implement the water loss ordinance, metering, conservation pricing, public outreach, and conservation program coordination and staffing support DMMs described previously.

Annual expenditure for DMM implementation in the Salinas District, including pro-rated staffing costs, is expected to average $0.63 million. Cumulative expenditure for DMM implementation for the period 2016-2020 is expected to total $3.13 million. Of this total, approximately 47% is earmarked for plumbing fixture, irrigation equipment, and landscape efficiency upgrades; 16% is earmarked for public information and school education programs; 8% is earmarked for distribution system water loss management; 10% is earmarked for site surveys/audits and customer water use reports; and 19% is earmarked for administrative and labor costs.

Because Cal Water is an investor-owned utility, the planned programs and corresponding expenditures for the next five years are subject to CPUC review and approval. The amount of program implementation for 2016 shown in Table 9-6 is what was approved in Cal Water's last General Rate Case. The amounts of program implementation for 2017-2019 are what Cal Water has proposed in its current General Rate Case. Conservation programs and budgets for 2020 will be determined by the subsequent General Rate Case. However, the amounts shown for 2020 in Table 9-6 are consistent with the amounts recommended in Cal Water's current Conservation Master Plan (see Appendix L).

Table 9-6: Planned Implementation of Customer and Water Loss Management DMMs: 2016-2020					
1. Plumbing Fixture Replacement	2016	2017	2018	2019	2020
Toilets & Urinals (number distributed)	520	570	570	570	570
Clothes Washers (number distributed)	85	65	65	65	65
Conservation Kits (number distributed)	50	200	200	200	200
2. Irrigation Equipment/Landscape Upgrades					
Smart Controllers (number distributed)	499	40	40	40	40
Nozzles & Spray Bodies (number distributed)	19,000	6,500	6,500	6,500	6,500
Turf Buy-Back (sq ft removed)	75,000	75,000	75,000	75,000	75,000
3. Residential Customer Assistance					
Monthly home water reports (homes receiving)	6,055	6,055	6,055	6,055	6,055
Surveys/Audits (homes receiving)	190	50	50	50	50
4. Non-Residential Customer Assistance					
Surveys/Audits (sites receiving)	10	5	5	5	5
Large Landscape Reports (sites receiving)	75	75	75	75	75
5. Water Loss Management					
Leak Detection (miles of main)	0	57	86	115	115
Estimated Annual Water Savings (AFY)	**178**	**364**	**475**	**585**	**621**
Cumulative Water Savings (AF)	**178**	**541**	**1,016**	**1,602**	**2,223**

Cal Water puts all proposed conservation programs through a rigorous benefit-cost analysis as part of a comprehensive program review and assessment process. The benefit-cost analysis yields information on expected water savings over the useful life of each DMM, cost of water savings, and avoided water supply cost of water savings. Results are used to rank programs in terms of cost-effectiveness, calculate the overall program unit cost of saved water and program benefit-cost ratio for each district, and develop district conservation budgets. The proposed DMMs for the Salinas District have an overall program unit cost of saved water of $568/AF (in 2015 dollars) and a benefit-cost ratio of 0.3. The unit cost of saved water includes all direct program costs associated with implementation of the proposed conservation programs. The low benefit-cost ratio is due to the fact that Salinas District can supply its customers with groundwater that has a low marginal pumping cost. However, because of declining groundwater levels in the region and future implementation of the Sustainable Groundwater Management Act, Cal Water is pursuing strategies, including investment in conservation, to reduce dependence on regional groundwater resources. The conservation measures also are needed if the

Salinas District is to meet its SB X7-7 GPCD targets. The conservation measures in Table 9-6 are the least cost set of measures deemed capable of helping the District do this.

Projected SB X7-7 compliance water use for Salinas District in 2020 under planned levels of DMM implementation is 134 GPCD compared to its target water use of 120 GPCD. Thus, Cal Water does not project Salinas District will meet its GPCD target in 2020.

SB X7-7 also allows water suppliers to form regional alliances and set regional targets for purposes of compliance. Under the regional compliance approach, water suppliers within the same hydrologic region can comply with SB X7-7 by either meeting their individual target or being part of a regional alliance that meets its regional target. The regional target is calculated as the population-weighted average target for the water suppliers comprising the regional alliance. The Salinas District has formed a regional alliance with Cal Water's King City District. Projected 2020 potable water demand for the regional alliance under expected levels of DMM implementation is 130 GPCD compared to a regional alliance target of 120 GPCD. Here again, projected 2020 regional water use exceeds the SB X7-7 target. Given these projections, Cal Water does not expect Salinas District will be in compliance with SB X7-7 in 2020 unless in the current and following General Rate Cases the CPUC authorizes substantially more investment in water conservation in the District than it has in the past.

9.5 Members of the California Urban Water Conservation Council

Cal Water is a member of the California Urban Water Conservation Council (CUWCC). CUWCC members have the option of submitting their 2013–2014 Best Management Practice (BMP) annual reports in lieu of, or in addition to, describing the DMMs in their UWMP (CWC 10631). The BMP annual reports for the Salinas District are provided in Appendix L.

Chapter 10
Plan Adoption, Submittal, and Implementation

This Chapter provides information on a public hearing, the adoption process for the UWMP, the adopted UWMP submittal process, plan implementation, and the process for amending the adopted UWMP.

This chapter includes the following sections:

10.1 Inclusion of All 2015 Data

10.2 Notice of Public Hearing

10.3 Public Hearing and Adoption

10.4 Plan Submittal

10.5 Public Availability

10.6 Amending an Adopted UWMP

10.1 Inclusion of All 2015 Data

This UWMP includes the water use and planning data for the entire calendar year of 2015, per DWR UWMP Guidelines (pg. 2-11).

10.2 Notice of Public Hearing

Prior to adopting the Plan, Cal Water held a formal public hearing to present information on its Salinas District UWMP on May 23, 2016, 5:30 PM at the following location:

Salinas Customer Center
254 Commission Street
Salinas, CA 93901

Two audiences were notified of the UWMP review at least 60 days prior to the public hearing: cities and counties, and the public. These audiences were noticed again with the specific date, time and location of the hearing at least two weeks prior to the public hearing. The notice to the public, as specified in Government Code 6066, can be found in Appendix D. Table 10-1 lists the cities and counties notified.

10.2.1 Notice to Cities and Counties

Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
City of Salinas	✓	✓
County Name	60 Day Notice	Notice of Public Hearing
County of Monterey	✓	✓

10.2.2 Notice to the Public

Notification to the public and to cities and counties also provided instructions on how to view the 2015 UWMP prior to the hearing, the revision schedule, and contact information of the UWMP preparer. A copy of this notice is included in Appendix D.

10.3 Public Hearing and Adoption

The deadline for public comments was May 30, 2016, one week after the public hearing. The final plan was formally adopted by Cal Water's Vice President of Engineering on June 20, 2016, and was submitted to California Department of Water Resources within 30 days of approval. Appendix B presents a copy of the signed Resolution of Plan Adoption. Appendix C contains the following:

- Letters sent to and received from various agencies regarding this plan
- Correspondence between Cal Water and participating agencies

10.4 Plan Submittal

This UWMP was submitted to DWR within 30 days of adoption and by the July 1, 2016 deadline. The submittal was done electronically through WUEdata, an online submittal tool. The adopted Plan was also sent to the California State Library and to the cities and counties listed in Table 10-1.

10.5 Public Availability

On or about May 9, 2016, a printed hard-copy of the Draft 2015 Urban Water Management Plan and the Conservation Master Plan was made available for review during normal business hours at the Salinas District's Customer Center, located at 254 Commission Street, Salinas, CA 93901. An electronic version was also made available by visiting Cal Water's website: https://www.calwater.com/conservation/uwmp.

10.6 Amending an Adopted UWMP

If the Plan is amended, each of the steps for notification, public hearing, adoption and submittal will also be followed for the amended plan.

Appendix A: UWMP Act Checklist

Appendix B: Resolution to Adopt UWMP

Appendix C: Correspondences

Appendix D: Public Meeting Notice

Appendix E: Service Area Map

Appendix F: Projection Analysis Worksheets (PAWS)

Appendix G: Supplemental Water Supply Information

Appendix H: DWR UWMP Tables Worksheets

Appendix I: DWR SB X7-7 Verification Forms

Appendix J: Schedule 14.1 and Local Conservation Ordinances

Appendix K: Water Efficient Landscape Guidelines

Appendix L: Conservation Master Plan

Appendix M: DWR/AWWA Water Balance Worksheet