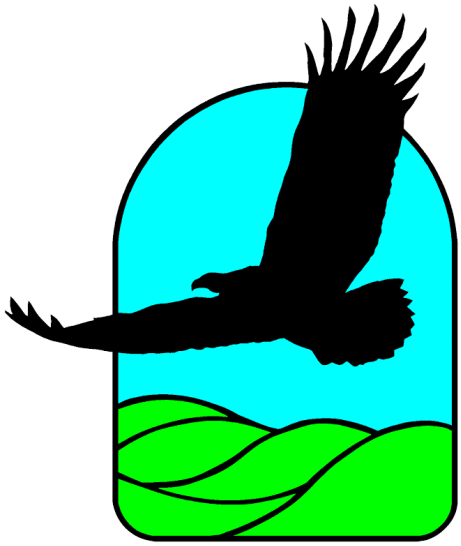
CITY OF WATSONVILLE, 250 MAIN STREET, WATSONVILLE, CA, 95076

City of Watsonville
2015 Urban Water Management Plan



City of Watsonville – Public Works & Utilities

June 2016

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Abbreviations and Acronyms

AB – Assembly Bill

AF – Acre-Foot

AFY – Acre-Feet per Year

AMBAG – Association of Bay Area Governments

BMP – Basin Management Plan

CFP – Corralitos Filter Plant

CIMIS – California Irrigation Management Information System

CWC – California Water Code

DAC – Disadvantaged Community

DMMs – Demand Management Measures

DOF – Department of Finance

DWR – Department of Water Resources

ETo – Reference Evapotranspiration

GIS – Geographic Information System

GPCD – Gallons per Capita per Day

IRWM – Integrated Regional Water Management

IRWMP – Integrated Regional Water Management Plan

LAFCO – Local Agency Formation Commission

MOU – Memorandum of Understanding

MWELO – Model Water Efficient Landscape Ordinance

NTU – Nephelometric Turbidity Units

PVWMA – Pajaro Valley Water Management Agency

PWS – Public Water System

RWF – Watsonville Recycled Water Facility

SB – Senate Bill

SB X7–7 – Senate Bill Seven of the Senate's Seventh Extraordinary Session of 2009

SBCWD – San Benito County Water District

SCVWD – Santa Clara Valley Water District

UWMP – Urban Water Management Plan

WSA – Water Service Area

WSCP – Water Shortage Contingency Plan

WWTP – Watsonville Wastewater Treatment Plant

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Chapter 1 – Introduction and Overview

Urban Water Management Plans (UWMPs) are prepared by California's urban water suppliers to support their long-term resource planning, and ensure adequate water supplies are available to meet existing and future water demands.

The City of Watsonville's (the City) 2015 UWMP revises the 2010 UWMP. The 2015 UWMP provides information on the present and future water demands and supplies, and provides an assessment of the City's water resource needs. The UWMP will act as a guide to maintain efficient use of urban water supplies, to promote conservation programs and policies, and to plan out strategies for responding to water shortages and drought conditions.

The California Department of Water Resources (DWR) staff reviews the UWMPs to make sure they have completed the requirements identified in the California Water Code (CWC), Sections §10608– 10656, then submits a report to the California Legislature summarizing the status of the plans.

Chapter 2 – Plan Preparation

Basis for Preparing a Plan

CWC 10617, CWC 10620(b), CWC 10621(a)

Every urban water supplier in California, that either provides over 3,000 acre-feet (AF) of water annually, or serves more than 3,000 urban connections is required to assess the reliability of its water sources over a 20-year planning horizon, and report its progress on 20% reduction in per-capita urban water consumption by the year 2020, as required in the Water Conservation Bill of 2009 SBX7-7. The plans must be prepared every five years and submitted to DWR.

The City's 2015 UWMP will provide a framework for long term water planning and will inform the public of the City's plans for long-term resource planning that ensure adequate water supplies for existing and future demands.

Table 2-1 Retail Only: Public Water Systems

Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
CA4410011	City of Watsonville	14,782	6,870
	TOTAL	14,782	6,870

NOTES: Data from the City's 2015 Public Water System Statistics. Volume in acre feet (AF).

Regional Planning

The City will not be involved in regional planning processes and has chosen to submit an individual UWMP.

Table 2-2: Plan Identification (Select One)	
☑	Individual UWMP
☐	Regional UWMP (RUWMP) *(checking this triggers the next line to appear)*
NOTES:	

Individual or Regional Planning and Compliance

The City has chosen to develop an UWMP that reports solely on its water service area (WSA). This individual UWMP addresses all requirements of the California Water Code (CWC). The City notified and coordinated with appropriate regional agencies and constituents.

Fiscal or Calendar Year and Units of Measure

CWC 1608.20(a)(1)

The City will report on a calendar year basis. The City will report water volumes in AF.

Table 2-3: Agency Identification	
Type of Agency (select one or both)	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year (select one)	
☑	UWMP Tables Are in Calendar Years
☐	UWMP Tables Are in Fiscal Years
If Using Fiscal Years Provide Month and Day that the Fiscal Year Begins (dd/mm)	
dd/mm	
Units of Measure Used in UWMP (select from Drop down)	
Unit	AF
NOTES:	

Coordination and Outreach

CWC 10631(j)

The City does not rely upon a wholesale agency for a source of water; therefore, the City does not have projected water demand from such a source.

CWC 10620(d)(2)

City staff, in the Public Works and Utilities department, met with staff from:

- City of Santa Cruz
- City of Scotts Valley
- County of Santa Cruz
- San Lorenzo Valley Water District
- Soquel Creek Water District
- Association of Bay Area Governments (AMBAG)
- Santa Cruz Integrated Regional Water Management (IRWM)
- Resource Conservation District of Santa Cruz (RCD)
- Santa Cruz Local Agency Formation Commission (LAFCO)

These agencies and organizations met to discuss the 2015 UWMP Guidebook, population projections, and current and future sources of urban water. Documentation of the meeting can be found in Appendix B.

In addition, the City works cooperatively with the Pajaro Valley Water Management Agency (PVWMA). The PVWMA overlies the City's WSA. The California Legislature created the PVWMA in 1984 to provide for the effective and efficient management of present and future water supplies in the Pajaro Valley. The PVWMA's mission is to efficiently and economically manage existing and supplemental water supplies in order to prevent further increase in, and to accomplish continuing reduction of, long-term overdraft and to provide and ensure sufficient water supplies for present and anticipated needs within its boundaries.

Chapter 3 - System Description

General Description

CWC 10631

The City is located along the Monterey Bay between the City of Santa Cruz and the City of Monterey, in the County of Santa Cruz. The City lies in the heart of the Pajaro Valley, surrounded by prime agricultural land and wetlands. Water is an integral component throughout the region's environs. Five small lakes are located near the City's northern and eastern boundaries. The City is bounded by Corralitos Creek to the north, Salisipuedes Creek to the east, and the Pajaro River to the south. The Pajaro River forms the boundary between the Santa Cruz and Monterey Counties. Several small creeks and sloughs meander through the City and extend to the south and west of Highway 1, which form what is referred to as the Watsonville Slough System.

The water system originated in 1877 when water was piped from the Corralitos area to a reservoir on Whiskey Hill (now Freedom Reservoir on Freedom Boulevard). The water system served the small community of Watsonville, under the name of the Watsonville Water and Light Company, until the City acquired it in 1927. In 1931 a slow sand filtration plant, the Corralitos Filter Plant (CFP), was constructed in Corralitos to filter the raw water coming from the Corralitos and Browns creeks. By 1979, the water system had grown to closely represent its current state. It consisted of eight pressure zones, ten wells, eight storage facilities, over 100 miles of pipeline, and the CFP.

CWC 10631(a)

Today, the City's WSA is larger than the City limits, extending into the unincorporated areas of Santa Cruz County. The service area consists of nine hydraulic pressure zones, fourteen wells, eight reservoirs and water storage facilities, nine booster stations, over 177 miles of pipelines, and the CFP. Today, the City's regional water system delivers to a population of 65,966 customers.

Service Area Boundary Maps

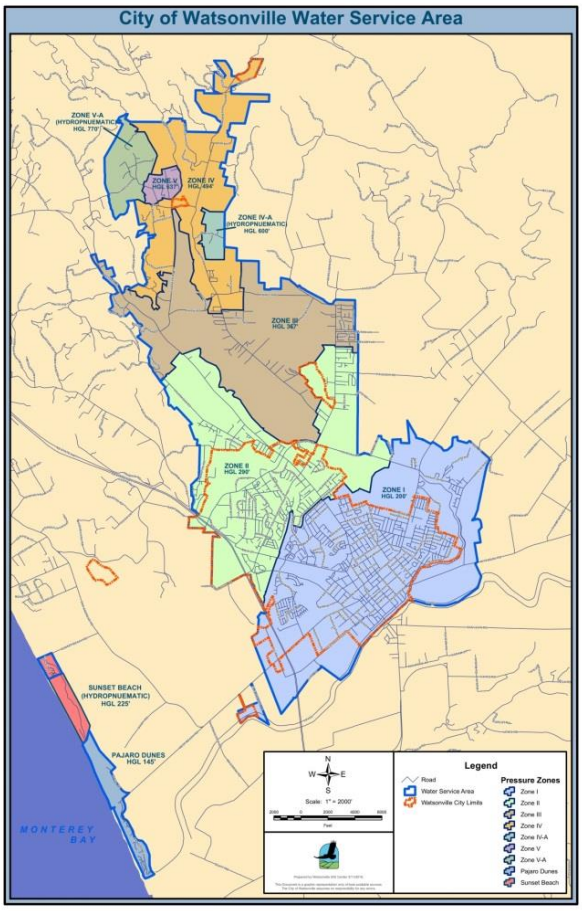

Figure 1 - The City's WSA. Created by the City's geographical information system (GIS) Center on March11, 2016.

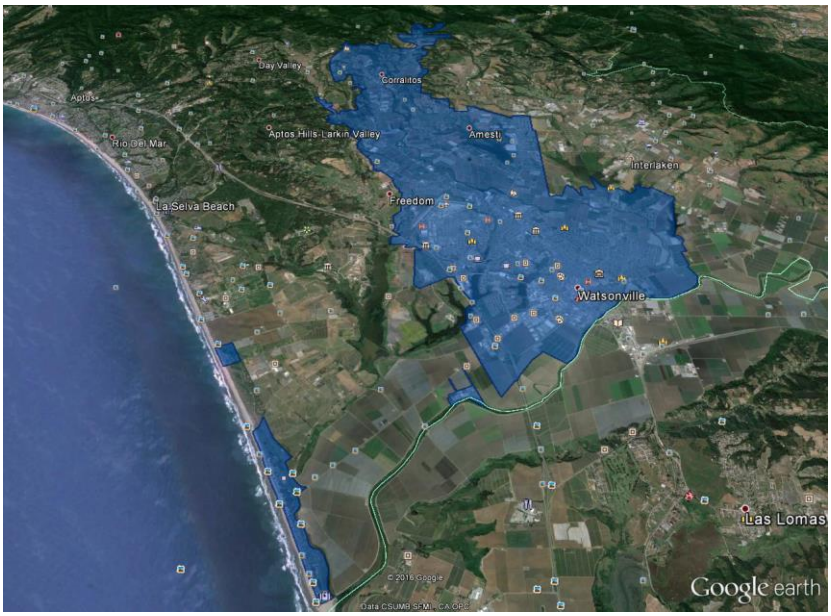

Figure 2 - The City's WSA. Created by the City's GIS Center on January 11, 2016.

Service Area Climate

CWC 10631(a)

The City is in a northern Mediterranean coastal climate, with dry, mild summers and cool winters. Between February 2015 and January 2016, the total evapotranspiration (ETo) was 42.89 inches (CIMIS 2016). The average temperature is 57.35°F and the average annual precipitation is 23.51 inches (US Climate Data 2016).

The City is located within the Pajaro River Watershed IRWM region as depicted in Figure 3. The PVWMA, the San Benito County Water District (SBCWD), and the Santa Clara Valley Water District (SCVWD) entered into a Memorandum of Understanding (MOU) for the purpose of coordinating water resources planning and implementation activities watershed-wide. The three agencies, collectively known as the Pajaro River Watershed Collaborative, led the development and implementation of the 2007 Pajaro River Watershed IRWM Plan (Pajaro IRWMP). The Collaborative was recognized as the Regional Water Management Group (RWMG) for the Pajaro IRWMP effort during DWR's Plan Review Process in 2009.

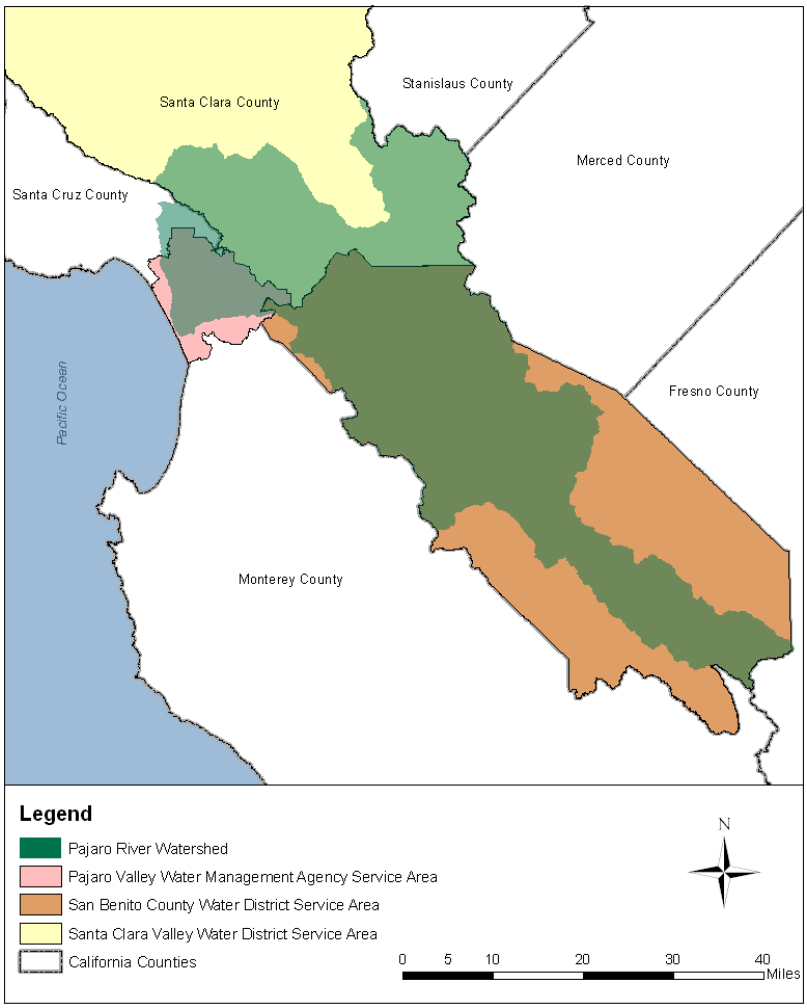

Figure 3 - Pajaro IRWM Boundaries

The RWMG conducted a climate change vulnerability assessment using the DWR Climate Change Handbook for Regional Water Planning. Based on the assessment, water demand vulnerabilities were identified in sea level rise, flooding, and ecosystem and habitat.

The impacts due to sea level rise include increased coastal flooding and damage to existing infrastructure. According to the Pajaro IRWMP, the City and surrounding agricultural areas are subject to flooding during the 100-year coastal flood. Critical water infrastructures, such as the Watsonville Wastewater Treatment Facility (WWTF), face potential inundation.

The impacts due to flooding include temporary and/or permanent displacement. The City is a low-lying economically disadvantaged community (DAC), which will be particularly vulnerable to flooding damages, including more intense storms and sea level rise.

The impacts on ecosystem and habitat include erosion and sedimentation, increased temperatures, drought conditions, and reduced water quality and flow. Estuarine habitats, such as the Watsonville Slough, could be impacted by reduced seasonal freshwater flows. The City's coastal ecosystems may be particularly vulnerable to acidification and changes in salinity balances, sedimentation, and nutrient flows.

Service Area Population and Demographics

CWC Section 10631

According to the City's 2015-2023 Housing Element, the City has developed in a compact, dense pattern due to constraints from environmental features, farmland, and County growth management policies. These constraints contribute to the City's density of 8,262 persons per square mile, compared to 594 in the unincorporated County, 2,554 in Scotts Valley, and 5,016 in the City of Santa Cruz.

As of the 2010 Census, Watsonville had a total of 13,528 housing units; representing an increase of approximately fifteen percent since 2000 (Housing Element, 2016). This increase is significantly more than the County-wide increase and is primarily due to annexations of already developed areas rather than new housing production. The City has identified a variety of vacant and underutilized sites where new housing may be developed, including infill sites, mixed-use opportunities, and single-family neighborhoods where second units may be added.

CWC 10631(a)

Table 3-1 Retail: Population - Current and Projected					
Population Served	2015	2020	2025	2030	2035
	65,966	68,957	72,093	75,382	78,833
NOTES: The method to estimate the 2015 population can be found in Chapter 5. The method and calculations to estimate the projected populations can be found in Appendix C.					

The estimated 2015 population of the City's WSA is 65,966. The methods for estimating this number can be found in Chapter 5. The projected populations were calculated by compounding growth onto the estimated 2015 population, and the calculations can be found in Appendix C.

CWC 10631(a)

According to 2010 U.S. Census data, Watsonville is the fastest growing city in Santa Cruz County, experiencing great population growth since 1980. This growth can be attributed to, among other things, the availability of more affordable housing in the City than in other County communities, in-migration of agricultural workers, and annexations of inhabited areas.

Despite its growth within the region, the City continues to be a leader in preservation of productive agricultural land and significant environmental resources, including hundreds of acres of open space, parks, sloughs, wetlands, and coastal zone lands.

Chapter 4 – System Water Use

Recycled versus Potable and Raw Water Demand

Chapter 4 addresses potable water demand for 2015. Recycled water is addressed comprehensively in Chapter 6, but a summary of recycled water demand is included in Table 4-3.

Water Uses by Sector

CWC 10631(e)(1)

The City's Public Works and Utilities' Customer Services Department, responsible for all water meter reads, determines the amount of water supplied by the City. The City's past water use, over the last ten years, can be found in Appendix A, in the City's Public Water System (PWS) Statistics.

Table 4-1 Retail: Demands for Potable and Raw Water - Actual

Use Type	2015 Actual		
	Additional Description	Level of Treatment When Delivered	Volume
Single Family	Includes multi-family use.	Drinking Water	3,999
Institutional/Governmental	The City combines Commercial and Institutional uses in its Statistics.	Drinking Water	982
Industrial		Drinking Water	424
Landscape		Drinking Water	348
Agricultural irrigation		Drinking Water	862
Losses	Water losses are the difference between potable water produced and total water delivered.	Drinking Water	209
Other		Drinking Water	46
		TOTAL	6,870

NOTES: Data from the City's 2015 PWS Statistics. The Statistics can be found in Appendix B. Volumes in AF.

Water deliveries projected within the City's WSA for 2020 through 2035 were calculated based on the City's 2000-2015 PWS Statistics submitted to DWR from 2000-2015. Population growth and the 2015 Model Water Efficient Landscape Ordinance (MWELO) were incorporated in the projections. The method and calculations for calculating the projected demand can be found in Appendix C.

Table 4-2 Retail: Demands for Potable and Raw Water - Projected					
Use Type	Additional Description	Projected Water Use (*Report To the Extent that Records are Available*)			
		2020	2025	2030	2035
Single Family	Includes multi-family use.	4,774	4,991	5,218	5,457
Institutional/Governmental	The City combines Commercial and Institutional uses in its Statistics.	1,150	1,117	1,084	1,051
Industrial		442	442	442	442
Landscape	Incorporates 30 percent reduction due to MWELO 2015.	344	381	417	454
Agricultural irrigation		756	756	756	756
Losses	Water losses are the difference between potable water produced and total water delivered.	415	392	369	346
Other		54	54	54	54
	TOTAL	7,934	8,132	8,340	8,560
NOTES: Projections calculated using analysis of the City's PWS Statistics 2000-2015. Method of calculations can be found in Appendix C. Volumes in AF.					

Table 4-3 Retail: Total Water Demands					
	2015	2020	2025	2030	2035
Potable and Raw Water *From Tables 4-1 and 4-2*	6,870	7,934	8,132	8,340	8,560
Recycled Water Demand *From Table 6-4*	3,106	4,000	4,000	4,000	4,000
TOTAL WATER DEMAND	9,976	11,934	12,132	12,340	12,560
NOTES: Volumes in AF.					

Distribution System Water Losses

CWC 10631(e)(3)(A),CWC 10631(e)(1)(J), CWC 10631(3)(B)

The City's distribution system losses were quantified using the American Water Works Association (AWWA) Free Water Audit Software. A reporting worksheet, of the audit, in Excel format shall be submitted to DWR using DWR's online submittal tool.

There is a percentage of unaccounted for water that is attributed to system losses. The City's water losses over the last ten years average six percent of distributed water, calculations can be found in Appendix C. According to DWR, a detailed water audit and leak detection program of 47 California water utilities found an average loss of 10 percent (Water Use Efficiency, 2015), the City's average water loss is well below the State's average.

Table 4-4 Retail: 12 Month Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss*
01/2015	209.334
** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.*	
NOTES: Volume in AF.	

Estimating Future Water Savings

CWC 10631(e)(4)(A), CWC 10631(e)(4)(B)

The 2015 MWELO was adopted in November of 2015 and implemented in December of 2015. The City anticipates 30 percent reductions in landscape water use from 2015 onwards, as the 2015 MWELO is implemented; these savings are included in water use projections in Table 4-2.

Water Use for Lower Income Households

CWC 10631.1(a), California Health and Safety Code 50079.5(a)

The City is an Economically Disadvantaged Community (DAC). DAC status was determined based on the DAC definition provided in DWR's Proposition 84 and 1E IRWM Guidelines. A median household income (MHI) of less than $48,706 is the DAC threshold (80 percent of the Statewide MHI). The City, a 2010 Census Designated Place, has a MHI of $46,675 (U.S Census, http://factfinder2.census.gov), which is below the threshold and confirms its DAC status.

The *City of Watsonville 2015-2023 Housing Element* identifies that, of the City's share of the Monterey Bay Area's regional housing needs, 40 percent be designated to meet the needs of low, very low, and extremely low income households in the years 2015-2023. Therefore, the projected water demands for low income housing are figured as 40 percent of the water use. As a retail urban water supplier, the City must ensure that water supplies are available for these households. The City has included low income housing in water use projections in Table 4-2.

Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) *Drop down list (y/n)*	Yes
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc… utilized in demand projections are found.	Incorporates 30 percent reduction due to MWELO 2015, calculations found in Appendix A.
Are Lower Income Residential Demands Included In Projections? *Drop down list (y/n)*	Yes
NOTES: The City is a DAC and assumes lower income residential demands into both single and multi-family residential water demands.	

Climate Change

The Pajaro IRWM region, of which the City is a part of, has water demand vulnerabilities. The vulnerabilities identified are increased demands from agricultural irrigation, landscape irrigation, cooling and the environment; increased groundwater overdraft; increased seawater intrusion, and reduced drought reliability. The following is taken from the Pajaro IRWMP:

Major uses in the watershed include agricultural irrigation and municipal and industrial (M&I) use. While the relative agricultural and M&I usage percentages are expected to remain relatively constant over the next 20 years, the proportion of agriculture usage in the SBCWD service area is expected to grow by two to three percent per year, due to a projected increase in irrigated acreage of approximately 17,000 acres by 2022. In addition, the PVWMA service area has observed a significant shift in the types of crops grown, moving from lower to higher water-use crops such as nursery, strawberry, and vine crops. It is assumed that approximately 2,000 acres of deciduous crops will be converted to berry crops by 2040, equally distributed between strawberry and raspberry crops.

The seasonal variability of water demands is projected to increase with climate change as droughts become more common and more severe (DWR, 2008). In addition, warmer temperatures will increase ETo rates while extending the length of growing seasons, resulting in an overall increase in agricultural water demands (CNRA, 2009). In addition, fruit crops are more climate-sensitive and may require additional water as the climate warms. However, the agricultural community is also making significant advances in water conservation by implementing climate-based irrigation systems and other types of technology, and substantial water savings could be associated with this effort. Therefore, it is unclear how much water may be necessary to maintain yield and quality in future years.

Other seasonal uses such as landscape irrigation and cooling demands are also expected to increase as a result of climate change (DWR, 2008 and CNRA, 2009). Identification of industrial cooling towers and similar facilities will help the region gain better understanding of the potential increases in seasonal demands.

Chapter 5 – Baselines and Targets

Updating Calculations from 2010 UWMP

CWC 10608.20(g), Methodologies DWR 2011, Methodology 2 Service Area Population

The City used 2010 Census data for the baseline population calculations in the 2010 UWMP; however, the City recalculated their baseline population for the 2015 UWMP using the full data set of the 2010 Census data.

The City will not update the chosen Target Method. The City will continue to use Target Method 3.

Baseline Periods

CWC 10608.20(e), CWC 10608.20(g)

The City chose to use the same 10-year baseline period selected for the 2010 UWMP.

CWC 10608.12(b)(1), CWC 10608.12(b)(2)

In order to determine its baseline, the City referenced the total urban water supplied in the year 2008 (per DWR methodologies). Because the volume of recycle water delivered was less than ten percent (there was no recycled water delivered in 2008), a ten year range was selected to determine the baseline period range. The ten year baseline range begins in 2001 and ends in 2010 (Appendix D, SB X7-7 Table-1).

CWC 10608.12(b)(3)

The City's five year baseline range begins in 2006 and ends in 2010 (Appendix D, SB X7-7 Table-1).

Service Area Population

CWC 10608.20(e), CWC 10608.20(f), CWC 10644(a)(2)

Since the City's WSA extends beyond the City limits into areas of unincorporated Santa Cruz County, the City estimated the City's WSA 2015 population using in-house methods developed by City GIS staff in consultation with staff from AMBAG and analysts from the California Public Utilities Commission. Data from the U.S. Census Bureau and data from the California Department of Finance (DOF) was utilized. The City received a pre-review from DWR to assess the adequacy of the alternate population methods. Documentation of the pre-review can be found in Appendix B. The method selection can be found in Appendix D, SB X7-7 Table-2.

Census block shapefiles for Santa Cruz County were exported from a statewide dataset. Using the shapefiles, the area of each block was extracted and calculated. These blocks were then clipped to conform to the City's WSA boundary and new areas were calculated. The new areas

were divided by the pre-clipped areas to obtain the percentages of the blocks within the WSA. Then the percentages were multiplied by the associated blocks' estimated 2015 populations. All the blocks' populations were summed to a value of 65,966. Due to the large dataset used to estimate the population, calculations and documentation can be provided, by the City, upon request.

The methods to calculate the 2015 estimated population were utilized to calculate the 2000 and 2010 populations; and adjustments were made based on the respective years' data.

To back-cast the estimated populations for the years 2001 through 2009, the years within the baseline period, a linear trend was utilized. The calculations can be found in Appendix C. The baseline populations can be found in Appendix D, SB X7-7 Table-3.

Gross Water Use

CWC 10608.12(g), California Code of Regulations Title 23 Division 2 Chapter 5.1 Article

For the annual gross water use of the baseline years and 2015, the City deducted water delivered for agricultural use and industrial process water. The City was eligible to deduct industrial process water because it is a DAC. The volume of water deducted can be found in Appendix D, SB X7-7 Table 4-D. Documentation of eligibility can be found in Appendix D, SB X7-7 Table-4-C and SB X7-7 Table-4-C.4.

The gross water use can be found in Appendix D, SB X7-7 Table 4. The supplementary data for volume entering the distribution system can be found in Appendix D, SB X7-7 Table 4-A.

Baseline Daily Per Capita Water Use

CWC 10608.20(e)

The baseline ten year GPCD is 101. The baseline five year GPCD is 95. The 2015 compliance GPCD is 81. The data for the baseline and 2015 years can be found in Appendix D, SB X7-7 Table 5 and SB X7-7 Table 6.

2015 and 2020 Targets

CWC 10608.20(b), CWC 10608.20(e), CWC 10608.20(g)

The Water Conservation Bill of 2009, or SBX7-7, is a water conservation component that seeks to implement water use reduction goals to achieve a 20 percent statewide reduction in urban per capita water use[1] by December 31, 2020. The bill requires each urban retail water supplier to develop urban water use targets to help meet the 20 percent goal by 2020 and an interim 10 percent goal by 2015.

[1] From 2010 levels.

The City has chosen Target Method 3 as its 2020 Urban Water Use Target (Appendix D, SB X7-7 Table 7). Target Method 3 aims to meet 20 percent reduction in 2020 by achieving 95 percent of the Hydrologic Regional Target[2]. The City is located in the Central Coast region, whose target level is 123 GPCD, 95 percent of the target level is 117 GPCD, (Appendix D, SB X7-7 Table 7-E).

CWC 10608.22

The confirmed 2020 target is 117 GPCD; this can be found in Appendix D, SB X7-7 Table 7-F. The 2015 interim target is 109 GPCD; this can be found in Appendix D, SB X7-7 Table 8. The 2015 interim target is less than the 2020 Target due to an error in the DWR's required SB X7-7 Verification Form. This error occurs when an agency's five year baseline is less than 100 GPCD. DWR recognizes the error and may address it in the future.

Table 5-1 Baselines and Targets Summary
Retail Agency or Regional Alliance Only

Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	*2001*	*2010*	*101*	*109*	*117*
5 Year	*2006*	*2010*	*95*		
*All values are in GPCD					

2015 Compliance Daily per Capita Water Use (GPCD)

CWC 10608.12(e), CWC 10608.24(a), CWC 10608.20(e)

The City was in compliance with the interim 2015 target, as the target was 109 GPCD and the City's actual GPCD was 81 (Appendix D, SB X7-7 Table 9). The City is confident it will be in compliance with the 2020 target of 117 GPCD.

Regional Alliance

The City chose to comply with SB X7-7 requirements individually, not through a regional alliance.

Table 5-2: 2015 Compliance

Actual 2015 GPCD*	2015 Interim Target GPCD*	**Optional Adjustments to 2015 GPCD** (Enter "0" if no adjustment is made)			2015 GPCD* *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015? Y/N
			TOTAL Adjustments*	Adjusted 2015 GPCD*		
81	109		0	81	81	Yes
*All values are in GPCD						

[2] From the 20 x 2020 Water Convention Plan, State of California Agency Team, 2010.

Chapter 6 – System Supplies

Purchased or Imported Water

The City does not purchase or import water.

Groundwater

Fourteen groundwater wells currently provide the City with an approximate average of 7,000 AFY of water. All City water is treated at each well site and meets or exceeds State and Federal drinking water standards. The City's wells are capable of providing 21,000 AFY of water. The City intends to continue pumping groundwater from its existing well sources. It is likely that additional sources will be explored for future use. At this time, the City's wells are capable of providing for both current and projected water demands.

CWC 10631(b)(2)

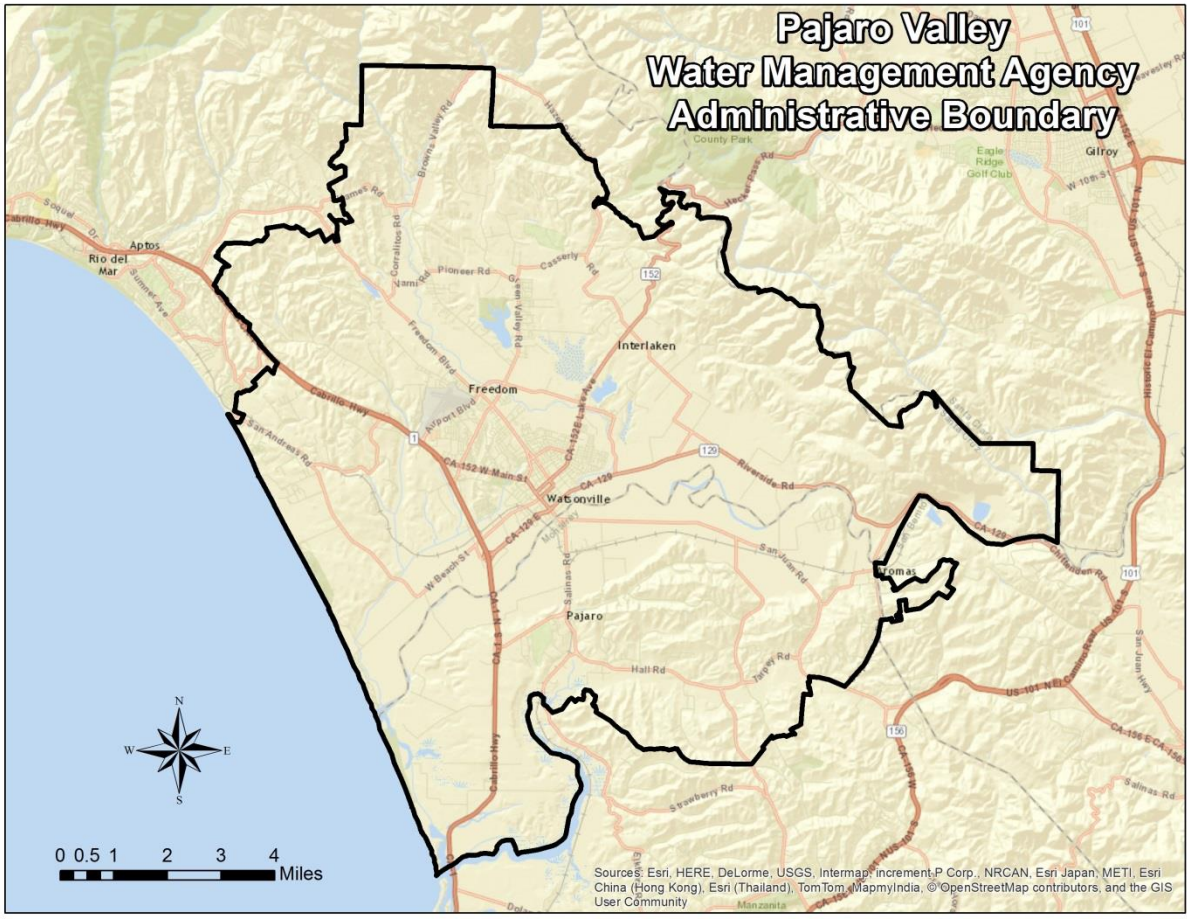

Figure 4 - The Pajaro Valley Basin boundaries.

The City uses approximately twelve percent of the groundwater pumped from the Pajaro Valley Basin. Groundwater resources in the Pajaro Valley Basin have been managed by the PVWMA since 1984. The basin is not adjudicated. According to California's Groundwater Bulletin 118 (Bulletin 118), Pajaro Valley groundwater levels have been in a decreasing trend due to pumping in excess of recharge. In September of 2000, 51 square miles of the 110 square mile basin had water levels less than sea level. Between 1964 and 1997, there has been an estimated loss of 300,000 AF of freshwater storage from the basin. Approximately 200,000 AF of this freshwater storage loss is due to seawater intrusion, while 100,000 AF is due to conditions of chronic overdraft and resultant falling groundwater levels.

Bulletin 118 states that data indicates seawater is intruding along the coast in the middle and lower portions of the Aromas sands and that poor-quality water is present in the deeper zones (RMC 2001). There are also localized areas of high hardness, nitrates, sulfates, iron, manganese, boron, heavy metals, and organics (EIP 1993).

The known stakeholders in the Pajaro Valley groundwater basin management include agricultural users, the City, Aromas Water District, and Pajaro/Sunny Mesa Community Services District, rural residents, commercial and industrial businesses, and environmental agencies such as NOAA Fisheries, California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers.

CWC 10631(b)(1), CWC 10631(b)(2)

The PVWMA was formed to serve the common benefit of all water users and to manage water resources within the Pajaro Valley Basin for all beneficial uses in the public interest. The PVWMA recognizes the importance of agriculture to the area, and designates, with the exception of Aromas, that any future imported water be used for agricultural purposes only, to restrain inducements to urbanization.

A PVWMA Basin Management Plan (BMP) was prepared and adopted in 1993 that defined and analyzed 33 management measures that could potentially correct the groundwater shortfall and seawater intrusion problems of the Pajaro Valley Basin.

The PVWMA updated the BMP, and it was adopted by the Board of Directors in 2014. The BMP Update, replaces previous BMPs, and identifies the recommended projects and programs for balancing the basin. In addition to providing a plan for the PVWMA to pursue, the BMP is a "basin-wide groundwater management plan" meeting the requirements of California's AB 3030 Groundwater Management Act. The BMP Update can be found in Appendix A.

CWC 10631(b)(2)

The PVWMA's purpose is to prevent further increase in, and accomplish reduction of, overdraft within the boundaries of the agency.

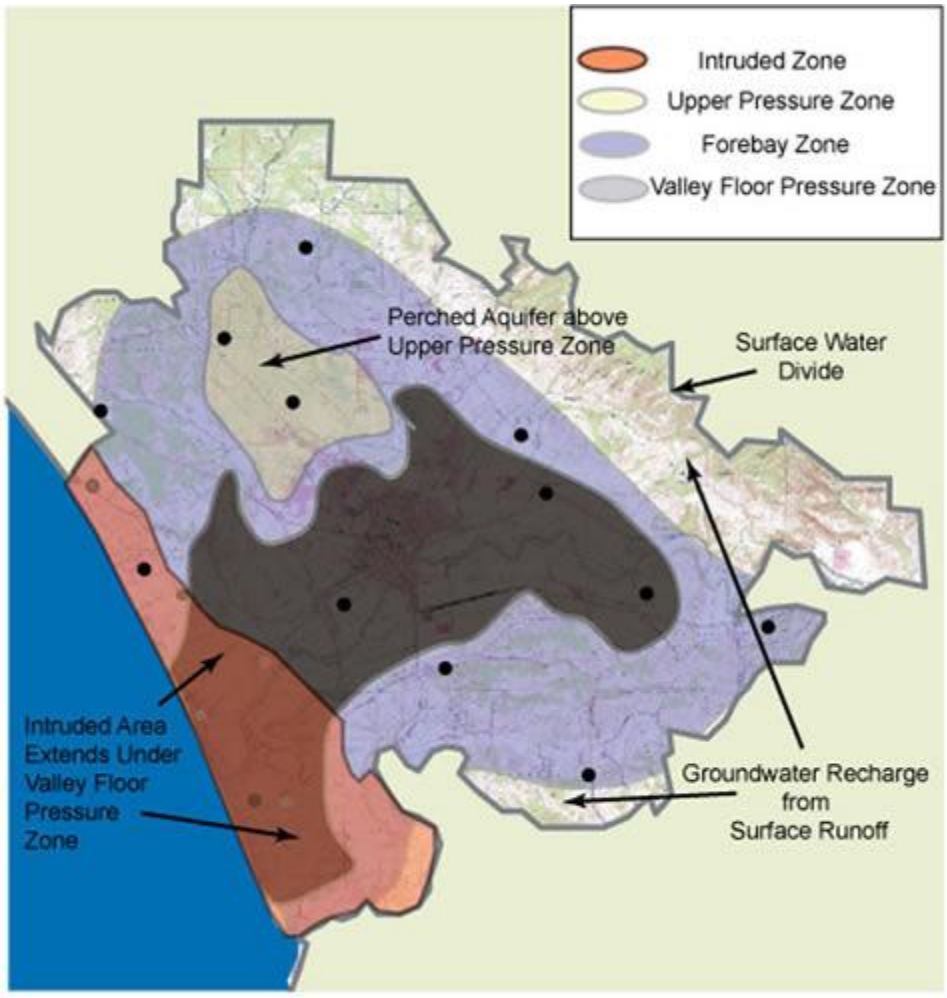

Figure 5 - Groundwater Monitoring image from the PVWMA's website.

The PVWMA has completed multiple water supply projects which work together to help reduce overdraft, retard seawater intrusion and improve and protect water quality within the entire basin. The PVWMA has constructed the Harkins Slough Diversion and Recharge Facilities, Watsonville Recycled Water Facility (RWF), supplemental wells, and over 20 miles of the Coastal Distribution System (CDS), a water conveyance pipeline. These facilities work together to reduce groundwater overdraft and seawater intrusion.

In April 2009, the PVWMA began delivering tertiary treated, disinfected recycled water into the CDS from the RWF. Expected to produce 4,000 AFY of new water for Pajaro Valley agriculture, the launch of the recycling project resulted from planning and cooperation between PVWMA, the City, stakeholder groups, and state and federal grant funding. The recycled water project includes inland wells that are used to provide blend water to improve the water quality for agricultural use.

The key to balancing the basin is to reduce groundwater pumping to within the sustainable basin yield. This can be accomplished in one of two ways – reduce demand (with demand

management and/or land retirement and conservation programs) or increase management and availability of supply (by developing new supplemental water supplies).

At full operations, the recycled water, Harkins Slough blend water, and additional groundwater blend supplies will allow the distribution of up to 7,150 AFY to offset groundwater pumping by agricultural water users in the Pajaro Valley coastal area. Additional water supply facilities are described in the BMP Update that will increase the supplemental irrigation supply by an additional 3,400 AFY.

Hydrologic modeling conducted using the PV-Integrated Groundwater Surface Water Model (PV-IGSM) during the development of the 2002 Revised BMP suggests that the basin sustainable yield can be increased if pumping is eliminated in the coastal area.

The City, along with all groundwater users in the basin, currently pays an augmentation fee, based on the quantity of water extracted from groundwater sources, to PVWMA to address the existing overdraft. PVWMA uses these funds to implement their BMP and support proposed water projects that will ultimately prevent further groundwater overdraft and seawater intrusion.

CWC 10631(b)(3)

The City relies primarily on its groundwater sources. The City continuously monitors its groundwater well levels. Seasonal (between winter and summer months) variations in static water levels are common. Fluctuations between 3 and 7 feet have been observed. The City in partnership with PVWMA will continue efforts that will lead to a sustainably managed groundwater basin and work to prevent activities that lead to overdraft.

Table 6-1 Retail: Groundwater Volume Pumped

Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
Alluvial Basin	Pajaro Valley	6396.54	7126.64	7943.47	7455.87	6969.91
	TOTAL	6,397	7,127	7,943	7,456	6,970
NOTES: Volumes in AF.						

Surface Water Sources

During years of normal rainfall, the City utilizes a combination of surface water and groundwater supply sources. The City enjoys pre-1914 water rights on the Corralitos and Browns creeks, north of the City limits. The surface diversions are piped to the Corralitos Filter Plant (CFP) and are treated via slow sand filtration and disinfection. The CFP averages approximately 900 AF of water per year, though it has a capacity of 2,400 AF per year. Its operation is limited by the amount of surface water available in the Corralitos and Browns Creeks. At the Eureka Canyon Intake minimum bypass flows must be maintained by the City to allow for fish passage. The CFP operates seasonally, typically starting in late spring through the

fall. During the rainy season the CFP is usually shut down due to the high turbidity of the intake water. Higher turbidity waters are not conducive to the efficiency of a slow sand filtration plant so a creek water turbidity of 10 Nephelometric Turbidity Units (NTU) or less is desired. Only when these conditions are being met does the City collect and treat surface water for distribution.

Stormwater

The City does not have a stormwater recovery system.

Wastewater and Recycled Water

CWC 10633

The City's Wastewater Treatment Facility (WWTF) collects and treats all of the wastewater (excluding storm water run-off) from a 21 square mile service area comprising users within the City, Freedom County Sanitary District, Pajaro County Sanitary District and Salsipuedes Sanitary District. The WWTF has served as a first line of defense in protecting the Monterey Bay's water quality. The WWTF is located on the Pajaro River, southwest of Watsonville between Highway 1 and the Monterey Bay. More than 170 miles of pipeline are used to transport wastewater to the facility for treatment.

CWC 10633(a), CWC 10633(b)

The WWTF treats a daily average of 6-7 million gallons of wastewater in dry weather, and is permitted to treat up to 12 million gallons per day. The wastewater treatment process includes primary sedimentation, biological filtration, aeration, and secondary clarification. In 2010, the City completed its upgrade of the WWTF to include tertiary treatment, making recycled water an available resource.

All secondary treated water undergoes extensive monitoring and testing to insure compliance with all State and Federal pollution prevention laws prior to being discharged to the Monterey Bay over a mile off shore. The recycled water is used for agricultural irrigation.

Table 6-2 Retail: Wastewater Collected Within Service Area in 2015						
Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2015	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?
COW	Metered	4,766	COW	WWTP	Yes	No
Total Wastewater Collected from Service Area in 2015:		4,766				
NOTES: The City of Watsonville's Wastewater Treatment Plant (WWTP). Volume in AF.						

Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2015									
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2015 volumes			
						Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
WWTP	Pacific Ocean	1.5 miles off shore	Ocean outfall	Yes	Secondary, Undisinfected	4,766	1,660	0	0
WWTP	Various	Farmland	Other	Yes	Tertiary	0	0	3,106	0
					Total	4,766	1,660	3,106	0
NOTES: Volumes in AF.									

CWC 10633(c)

The RWF is located at the City's WWTF. The RWF is designed to treat 4,000 AFY of wastewater to recycled water standards (Title 22).

CWC 10633(d)

The Water Recycling Project provides recycled water for crop irrigation throughout the coastal areas of the South Santa Cruz and North Monterey counties. By treating wastewater and making it available to the $900 million local agricultural industry, the Water Recycling Project protects groundwater that is being consumed more quickly than it is replenished. In addition, the use of recycled water for irrigation reduces wastewater discharges into the Monterey Bay National Marine Sanctuary.

CWC 10633(e)

Additional uses for the recycled water will continue to be explored by the City and the PVWMA. More information on the Water Recycling Project can be found here: http://www.pvwater.org/project-operations/recycled-water.php.

Table 6-4 Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area

Name of Agency Producing (Treating) the Recycled Water:		City of Watsonville					
Name of Agency Operating the Recycled Water Distribution System:		Pajaro Valley Water Management Agency					
Supplemental Water Added in 2015		862.3573351					
Source of 2015 Supplemental Water		City of Watsonville					
Beneficial Use Type	General Description of 2015 Uses	Level of Treatment	2015	2020	2025	2030	2035
Agricultural irrigation	Agricultural irrigation	Tertiary	3,106	4,000	4,000	4,000	4,000
		Total:	3,106	4,000	4,000	4,000	4,000
**IPR - Indirect Potable Reuse*							
NOTES: The current maximum capacity that the WWTP is4,000 AFY. Volumes in AF.							

CWC 10633(e)

Table 6-5 Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual		
Use Type	**2010 Projection for 2015**	**2015 Actual Use**
Agricultural irrigation	4,000	3,106
Total	4,000	3,106
NOTES: 2010 projection for 2015 from the 2010 UWMP. Volumes in AF.		

CWC 10633(f) , ***CWC 10633(g)***

Table 6-6 Retail: Methods to Expand Future Recycled Water Use			
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
Add additional distribution piping, and connect more farmers to existing distribution system	Irrigate more acreage with recycled water	2016-2019	1,200
		Total	1,200
NOTES: Expected increase in recycled water use based on an increase of 300 AFY, for the years 2016-2019.			

Desalinated Water

CWC 10631(i)

Desalination of wastewater, groundwater, or seawater is an option that has been explored in the PVWMA BMP. It is generally considered cost-prohibitive, and is not likely to be pursued by the City or PVWMA.

Exchanges or Transfers

CWC 10631(d)

The City does not have any plans to transfer or exchange water. However, the PWMA entered into an agreement for the assignment of 6,260 AFY of contracted Central Valley Project (CVP) water from the Mercy Springs Water District in November 1998. The agency has explored options to exercise this agreement through construction of a pipeline to link the Pajaro Valley with the San Felipe water system. This is detailed in the attached PVWMA BMP. Currently, this option is not being considered.

Future Water Projects

CWC 10631(g)

New wells can be placed within the Pajaro Valley, and would be located hydraulically upstream of the seawater intrusion areas in order to reduce impacts on the groundwater basin.

Both the Corralitos and Browns creeks could be better utilized as surface water sources. Currently, the CFP cannot operate when the intake water has a turbidity of greater than 10 NTU. Heavy rains create high turbidity in the creeks, making the CFP inoperable during the periods of highest flow. In 2014, the City was awarded a grant to install a conventional surface water treatment plant. This surface water treatment plant upgrade is expected to begin construction in 2016-7. It will increase drinking water supplies and improve fisheries habitat. This upgrade aims to benefit both our groundwater supply and the environment.

Table 6-7 Retail: Expected Future Water Supply Projects or Programs

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 *This may be a range*
Corralitos Filter Plant Upgrade	No	New treatment will allow for year-round operation.	2017	Average Year	500-1000
NOTES: Volume in AF.					

Summary of Existing and Planned Sources of Water

CWC 10631(b)(4)

Table 6-8 Retail: Water Supplies — Actual		
Water Supply	2015	
	Actual Volume	Water Quality
Groundwater	6,861	Drinking Water
Surface water	0	Drinking Water
Total	6,861	
NOTES: The 2015 Total System Production number was used. Volumes in AF.		

The City's WWTF can provide up to 4,000 AFY of recycled water. Though this recycled water is treated to Title 22 standards, it is not connected to the general distribution system and is intended for agricultural purposes only. Because the recycled water is intended strictly for agricultural purposes it is not included in the total water supply volume.

Table 6-9 Retail: Water Supplies — Projected				
Water Supply	**Projected Water Supply** *Report To the Extent Practicable*			
	2020	**2025**	**2030**	**2035**
	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Groundwater	21,000	21,000	21,000	21,000
Surface water	1,000	1,000	1,000	1,000
Total	22,000	22,000	22,000	22,000
NOTES: Volumes in AF.				

Climate Change Impacts to Supply

Based on the Pajaro IRWM's Climate Change Vulnerability Assessment, water supply vulnerabilities were identified in increased groundwater overdraft, increased seawater intrusion, and reduced drought reliability.

Potential climate change impacts on water supply include:

- Snowpack quantity is expected to decrease overall as snowlines recede (DWR 2008; CNRA, 2009).
- Snowmelt runoff timing is expected to shift as flows increase in the winter and decrease in the late spring/early summer (DWR 2008). This could result in shifted timing of flood-control dam functionality and changes in reservoir storage throughout the year.
- While precipitation projections are less definitive than other climate variables, there is

general consensus that precipitation in the Southwestern US will decline over the second half of the 21st Century (CCSP 2009).

- Coastal aquifers will be subject to seawater intrusion, especially in aquifers with high pumping rates (DWR 2008).
- Droughts are expected to be more severe and potentially more frequent (DWR, 2008; CNRA, 2009).

Changes in local hydrology could affect surface storage of water and natural recharge to the local groundwater and the quantity of groundwater that could be pumped in a sustainable manner. Additional overdraft could exacerbate seawater intrusion in the Pajaro Valley. Overall, the region could become less drought-tolerant.

Chapter 7 – Water Supply Reliability

Constraints on Water Sources

CWC 10631(c)(2), CWC 10634

Water supply constraints and their respective management strategies can be found in Chapter 6.

Based on review of water quality monitoring data ranging from 1990 to the present, there are no significant changes in the City's primary or secondary water quality standards. Overall groundwater quality is very good and water quality objectives are achieved in all wells. As such, the City does not believe that water quality will be an impact on the reliability of its water supplies. The City will strictly follow the requirements established by federal and state regulatory agencies and ensure that it continues to deliver high quality drinking water.

Surface water comprises only about ten percent of the City's total water supply. In the event of a drought or breakdown of the surface water filtration plant, such as occurred from 1989 through 1996, the City would depend more heavily on groundwater. City wells are not currently run at full capacity, and can supply additional water when needed.

The City is able to supply its customers with adequate water through several years of drought. However, during drought conditions, the City would also make significant increases in its water conservation program. The City uses about ten percent of the groundwater in the Pajaro Valley Basin, and would take all possible action to reduce the demand on the already over-drafted groundwater basin. The City will continue to work cooperatively with the PVWMA to find additional water supply options.

On July 1, 2014, California became the first state to set a drinking water regulation specifically for chromium-6. Six of the City's wells will need treatment in order to comply with the new State regulation. The City engaged with consultants and engineers to identify the most appropriate treatment technology for the chromium-6 impacted wells and a treatment technology was selected. The City has submitted its compliance plan to the State Water Resources Control Board - Division of Drinking water. Compliance with this new regulation is required by January 1, 2020. The City plans to have each of its impacted sources meet the required treatment levels within the compliance period.

Further water quality information can be found in the 2015 Consumer Confidence Report, included in Appendix A.

Reliability by Type of Year

CWC 10631(c)(1)(A)(B)(C)

Table 7-1 Retail: Basis of Water Year Data			
Year Type	Base Year	Available Supplies if Year Type Repeats	
		Volume Available	% of Average Supply
Average Year	1999	6402	100%
Single-Dry Year	2014	6122	96%
Multiple-Dry Years 1st Year	2012	7126	111%
Multiple-Dry Years 2nd Year	2013	7942	124%
Multiple-Dry Years 3rd Year	2014	7454	116%
NOTES: Groundwater. The City can provide reliable water supplies not only under normal conditions but also under both the single driest year and the multiple dry year events. Based on COW Freedom Station rainfall 1980-2015 data, the average rainfall is 22.94" and closest year to that average is 1999.			

The City can provide reliable water supplies not only under normal conditions but also under both the single driest year and the multiple dry year events.

Supply and Demand Assessment

CWC 10635(a)

The WWTF can produce recycled water, which in turn gets distributed to agricultural users (Table 6-4) within our water service area. It is important to note that while this recycled water is a benefit to our system, it is not a demand on our City's potable and raw water system supply.

Table 7-2 Retail: Normal Year Supply and Demand Comparison				
	2020	2025	2030	2035
Supply totals *(autofill from Table 6-9)*	22,000	22,000	22,000	22,000
Demand totals *(autofill from Table 4-3)*	11,934	12,132	12,340	12,560
Difference	10,066	9,868	9,660	9,440
NOTES: Volumes in AF. **Demand totals** reflect the combined volumes of potable/raw water AND recycled water. Recycled water is NOT a demand on the source waters. Subtracting the recycled water (see Table 4-3) from the **Demand totals** results in the volume for just the potable/raw water.				

Table 7-3 Retail: Single Dry Year Supply and Demand Comparison				
	2020	2025	2030	2035
Supply totals	21,000	21,000	21,000	21,000
Demand totals	11,934	12131.6	12,340	12,560
Difference	9,066	8,868	8,660	8,440
NOTES: Volumes in AF. **Demand totals** reflect the combined volumes of potable/raw water AND recycled water. Recycled water is NOT a demand on the source waters. Subtracting the recycled water (see Table 4-3) from the **Demand totals** results in the volume for just the potable/raw water.				

Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison					
		2020	2025	2030	2035
First year	Supply totals	21,000	21,000	21,000	21,000
	Demand totals	11,934	12,132	12,340	12,560
	Difference	9,066	8,868	8,660	8,440
Second year	Supply totals	21,000	21,000	21,000	21,000
	Demand totals	11,934	12,132	12,340	12,560
	Difference	9,066	8,868	8,660	8,440
Third year	Supply totals	21,000	21,000	21,000	21,000
	Demand totals	11,934	12,132	12,340	12,560
	Difference	9,066	8,868	8,660	8,440
NOTES: Volumes in AF. **Demand totals** reflect the combined volumes of potable/raw water AND recycled water. Recycled water is NOT a demand on the source waters. Subtracting the recycled water (see Table 4-3) from the **Demand totals** results in the volume for just the potable/raw water.					

Regional Supply Reliability

CWC 10620(f)

The City has incorporated a number of resource maximization tools into the management and operation of the water utility. The City's main emphasis is in water conservation. City coordination with the PVWMA on the BMP is aimed at reducing the current overdraft. This will help reduce the amount of water potentially required for basin management through importation from outside wholesalers or regions.

Chapter 8 – Water Shortage Contingency Plan

Guiding Principals

This chapter contains the City of Watsonville's Water Shortage Contingency Plan (WSCP), developed to serve as a flexible framework of planned response measures to mitigate water supply shortages. The WSCP was prepared in accordance with the following guiding principles:

- Shared contribution: All customers will share the burden of reducing water use.
- Meet basic health and safety needs: Highest priority given to essential uses.
- Prioritize reducing nonessential water uses: Focus on eliminating outdoor water and other non-essential uses.
- Minimize economic impacts to businesses: Minimize actions that would have substantial impact on the local economy.
- Communication at every level to ensure customer response and confidence.

Stages of Action

CWC 10632(a)(1)

Multiple factors, including drought, disaster and water supply system failure could cause a reduction in the City's water supply. The following sections describe the actions the City will take to respond to water shortages of various levels. The City will implement each Stage when the City's annual water supply is reduced by the specific levels: up to 10 percent, 11 to 25 percent, 26 to 40 percent, and greater than 40 percent.

Table 8-1 Retail
Stages of Water Shortage Contingency Plan

Stage	Complete Both	
	Percent Supply Reduction[1] *Numerical value as a percent*	Water Supply Condition (*Narrative description)*
1	0-10	Demand exceeds supply by 0 - 10 percent
2	11-25	Demand exceeds supply by 11 - 25 percent
3	26-40	Demand exceeds supply by 26-40 percent
4	> 40	Demand exceeds supply > 40 percent

[1] One stage in the Water Shortage Contingency Plan (WSCP) must address a water shortage of 50 percent.

Stage 1: Up to 10 Percent Water Shortage
During shortages of up to 10 percent, the City will take the following actions:

- Expand existing efforts to promote conservation.
- Intensify water conservation public information and outreach programs.

- Allocate additional funds to water conservation staffing, rebates and outreach programs.
- Enforcement of landscape water use per the MWELO and previously approved water allowances.

Stage 2: 11 to 25 Percent Water Shortage
Stage 2 includes all Stage 1 actions and initiates several mandatory water use restrictions and requirements:

- Washing paved or hard surfaces is prohibited, except by bucket or to prepare a surface for painting, to maintain solar panels, or for health and safety reasons.
- At-home vehicle washing is prohibited, except by bucket.
- Watering or irrigating landscapes is restricted as follows:
  - Prohibited between 9:00 a.m. and 5:00 p.m. (except by bucket or hand-held hose with shut-off nozzle)
  - Allowed only two days per week as scheduled and posted by the City.
  - Prohibited for more than fifteen minutes per allowed day and method (except for drip irrigation)
- Using potable water to fill decorative water features is prohibited except to sustain aquatic life.
- Constructing or installing and operating new commercial car washes and commercial laundry systems that do not use water recirculating technologies is prohibited.
- Irrigation of landscaping on street medians and narrow strips in and alongside of public streets is prohibited.
- Using potable water for construction needs is prohibited when recycled water is readily available.
- Water-conserving dishwashing spray valves are required in restaurants and other commercial kitchens.
- Hotels must offer guests the option to reuse sheets and towels.
- Water use in training exercises is prohibited.
- Customers are required to repair broken or defective water systems within five days.

As an alternative to the restrictions limiting irrigation days and duration, large landscape customers may instead limit irrigation to a set percentage of their water budget, as determined by the City based on the severity of the water shortage.

Stage 3: 26 to 40 Percent Water Shortage
Stage 3 includes all Stage 1 and Stage 2 actions and includes the following restrictions:

- Landscape watering is limited to one day per week for fifteen minutes (includes all types of irrigation including sprinkler, drip and hand watering).
- Irrigation of public parks, public buildings and playing fields including school grounds is prohibited.

- Using potable water to fill swimming pools and spas is prohibited.
- Repair of leaks and malfunctions in customer's water system required within 48 hours.
- Allows for implementation of water rationing if target reduction is not met.
- Additional staff may be hired to address outreach enforcement and leak repair.

Stage 4: Greater than 40 Percent Water Shortage

Stage 4 includes all Stage 1, Stage 2, and Stage 3 actions and includes the following restrictions:

- Prohibits irrigation of any landscape except for fire prevention, erosion control, or environmental mitigation.
- Mandates a water rationing systems with financial penalties for violations.
- Prohibits all home vehicle washing, including bucket method.
- Requires repair of broken or defective customer water systems within 24 hours.
- The City may intensify restrictions in previous stages or add new restrictions.
- Cease letters of water availability.

Prohibitions on End Uses

CWC 10632(a)(4), CWC 10632(b) , Health and Safety Code Section 115921(a)

Table 8-2: Restrictions and Prohibitions on End Uses

Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
1	Landscape - Other landscape restriction or prohibition	MWELO	No
2	Other - Prohibit use of potable water for washing hard surfaces		No
2	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water		No
2	Landscape - Limit landscape irrigation to specific times		No
2	Water Features - Restrict water use for decorative water features, such as fountains		No
2	CII - Other CII restriction or prohibition	Constructing or installing and operating new commercial car washes and commercial laundry systems that do not use water recirculating technologies is prohibited.	No
2	Landscape - Prohibit certain types of landscape irrigation	Street medians and narrow strips in and alongside of public streets.	No
2	Other - Prohibit use of potable water for construction and dust control	When recycled water is readily available.	No
2	CII - Commercial kitchens required to use pre-rinse spray valves		No
2	CII - Lodging establishment must offer opt out of linen service		No

Table 8-2: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
2	Other	Water use in training exercises is prohibited.	No
2	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Within 5 days.	No
3	Landscape - Limit landscape irrigation to specific days		No
3	Landscape - Prohibit certain types of landscape irrigation	Public parks, public buildings and playing fields including school grounds.	No
3	Other water feature or swimming pool restriction		No
3	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Within 48 hours.	No
3	Other	Water rationing if target reduction is not met.	No
4	Landscape - Prohibit all landscape irrigation	Except for fire prevention, erosion control, or environmental mitigation.	No
4	Other	Mandates a water rationing system.	Yes
4	Other	Prohibits all home vehicle washing.	No
4	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Within 24 hours.	No
4	Other	May intensify restrictions in previous stages or add new restrictions.	No
NOTES: Additionally, notices of violation are issued and a timeline is given to correct water wasting. Fines are implemented for chronic offenders.			

Penalties, Charges, Other Enforcement of Prohibitions

CWC 10632(a)(6)

Enforcement of The City's water conservation regulations is focused on soliciting cooperation from water customers who are unaware of the restrictions or have failed to comply. If discussions with the customer are unsuccessful in obtaining compliance, available enforcement

mechanisms contained in the Watsonville Municipal Code include fines, doubling of water rates and, as a last resort, discontinuance of water service.
Reports of water wasting in the City service area are handled by the Customer Services Division through a "hotline" via email and phone. Customer Service Technicians are dispatched to respond to reports of water waste and other violations. City staff offers free technical assistance to customers to help address water wasting. If measures are not corrected, notices of violation are issued and a timeline is given to correct the water wasting. Fines are implemented for chronic offenders.

Consumption Reduction Methods

CWC 10632(a)(5)

Table 8-3 Retail Only: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods		
Stage	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference
1	Other	Expand existing efforts to promote conservation.
1	Expand Public Information Campaign	
1	Other	Allocate additional funds to water conservation staffing, rebates and outreach programs.
3	Other	Additional staff may be hired to address outreach enforcement and leak repair.
4	Other	Cease letters of water availability.

Determining Water Shortage Reductions

CWC 10632(a)(9)

Under normal water supply conditions, automated flow meters and a computer network record potable water production figures continuously. The Water Operations Manager tracks totals regularly.

Irrigation use for the City's largest landscapes is monitored monthly by Parks staff and annually by the Water Conservation program using the landscape water budget. During a supply shortage, staff will continue to monitor water use on at least a monthly basis to determine the effectiveness of the WSCP's water use restrictions.

Revenue and Expenditure Impacts

CWC 10632(a)(7)

The City's water rates are designed to fully fund ongoing annual costs and maintain an adequate reserve. Water rates are composed of a flat fee and tiered per-unit fee for water consumed for residential customers. Nonresidential customers pay a uniform rate for each volume of water used. The City completed a rate study in 2015 and included reduced water consumption due to drought conditions as part of the projected revenues for the next five years. The current rate structure is designed to generate enough revenue to support ongoing water enterprise fund costs with reduced water use and the ongoing water conservation practices and programs that the City is implementing.

Resolution or Ordinance

CWC 10632(a)(8)

The City has prepared a draft resolution that could be modified and implemented in the event of a water supply shortage. A copy of this draft is included in Appendix A.

Catastrophic Supply Interruption

CWC 10632(a)(3)

The City has made a number of preparations to provide water during emergencies. Historically, the most common emergencies have been regional power outages and earthquakes.

The City water system is designed as a network, so that if one source of water or zone is damaged, water can be supplied from another area of the City. Additionally, each area within the service system is served by multiple wells, thus limiting dependence on a single supply source. Nearly all source water sites are equipped with emergency back-up generators and fuel tanks that will keep the system operational during emergencies for at least one to three days depending on the site; this time can be extended indefinitely by refilling fuel tanks.

Minimum Supply Next Three Years

CWC 10632(a)(2)

Table 8-4 Retail: Minimum Supply Next Three Years

	2016	2017	2018
Available Water Supply	21,000	21,000	21,000
NOTES: AF.			

Chapter 9 – Water Conservation/Demand Management Measures

The City recognizes the important of water conservation and is committed to promoting and practicing the sustainable use of water resources. The City demonstrates this commitment through outreach and educational programs, financial incentive programs and by implementing water conservation at City properties. The City also participates in regional water conservation planning and outreach programs. The following sections outline the City's specific efforts to reduce current demand and conserve water resources for the future.

Demand Management Measures for Retail Agencies

CWC 10631(f)(1)

Water Efficiency and Waste Prevention Ordinances

The Watsonville City Council adopted the Model Water Efficient Landscape Ordinance (MWELO) in 2015. It has been permanently incorporated into the Watsonville Municipal Code. The ordinance includes water-use restrictions focused on reducing water use in new development and major remodels. The MWELO requires City approval of landscape plans prior to issuance to building permits and also requires post-construction inspections.

Watsonville Municipal Code also contains sections that prohibit the wasting of water in the following sections:

6-3.432 Wasting of water.

It is unlawful for any person to use water for any of the following:

a) Watering of grass, lawn, ground cover, shrubbery, open ground, crops, trees, including agricultural irrigation, or an indiscriminate running of water or washing with water in a manner or to an extent which allows water to run to waste;
b) Permit the loss of water through leaks, breaks, or malfunction within the customer's plumbing;
c) The use of a hose without a quick-acting positive shut-off nozzle;
d) Maintenance or operation of any new ornamental fountain which does not recirculate 100 percent of water used;
e) Operation of a new car wash that does not use the best available water conservation technology;
f) Irrigation of turf, lawns, gardens or ornamental landscaping between 9:00 a.m. and 5:00 p.m., except by drip irrigation or hand watering with a quick-acting shut-off nozzle.

The City focuses its efforts on public education programs to promote water conservation activities, but will enforce the code and issue citations when necessary. Violations of the water waste ordinance have resulted in enforcement actions as per Watsonville Municipal Code.

Landscape Irrigation Systems

The 2015 adoption of the State's Model Water Efficient Landscape Ordinance (MWELO) applies to projects requiring a Planning-level permit that contain over 500 square feet of new or rehabilitated landscape areas. The new MWELO reduces the size of turf areas in residential projects and prohibits turf in commercial projects. It also requires the use of highly efficient irrigation methods and is predicted to reduce landscape water use in new projects by 30 percent or more.

The Watsonville Municipal Code also requires that existing irrigation systems be maintained to avoid run-off, over-spray, low head drainage or other similar conditions where water flows to waste.

City of Watsonville Green Building Code

The City follows the California Green Business Code which sets standards for improved energy efficiency, water conservation, indoor environmental quality and waste reduction.

Metering

The City is fully metered for all customer sectors, including separate meters for single-family and multi-family residential, commercial, large landscapes, and all institutional/governmental facilities. Metering is an effective conservation measure that directly associates cost with the amount of water used. It also provides the means for the City to identify and monitor high use customers.

The City will continue to install and read meters on all new services. To help ensure that the water is metered correctly, the City has a proactive meter calibration and replacement program. Small meters (one inch or less) are replaced at 20 year intervals. Large meters (one and a half inches and greater) are replaced at fifteen year intervals. Meter installation costs are part of new service connection fees.

Periodic reviews of customer water use are done to evaluate the effectiveness of this measure, comparing current water use with historic data.

Tiered Rate Structure

The City uses a tiered rate structure for single family accounts, based on the varying costs to produce water across the system. Commercial and other non-residential water accounts are billed by the volume of water used at a uniformed rate.

Public Education and Outreach

The City's Environmental Outreach Team provides bilingual programing to the City's diverse population. Water conservation education and outreach are top priorities of the Outreach Team given the groundwater overdraft and saltwater intrusion in the region. The following is a list of tools used to provide information to the public.

- City website, social media postings
- Bilingual water conservation flyers are included in the utility bills.
- Brochure racks at City facilities
- Newspaper advertisements and feature stories in the local English and Spanish publications.
- Local events: Earth Day/Day of the Child, Santa Cruz County Fair, Strawberry Festival at Monterey Bay, Cinco de Mayo celebration, and Fourth of July parade.
- Funding Green Gardener training at Watsonville Adult School with regional partners
- Funding Watersmart Garden web tool with regional partners.
- Water rebate information to local retailers including hardware stores, nurseries
- Landscape Consultation Program offers free home or business audits

Programs to Assess and Manage Distribution System Real Loss

The City routinely conducts distribution system water audits, leak detection, and repair. The City has permanently incorporated these programs into its utility operations. System losses are calculated by comparing the volume of water pumped from City wells and the surface water system to the volume of water delivered to customers. The City's annual system audits have shown losses of approximately 6%, which is far below the California average of ten percent system water loss. In addition to monitoring water losses, starting in 2014, the City has redoubled its efforts to replacement aging water infrastructure. The Watsonville City Council has recognized and supported adjustment to water rates to allow for expediting of the main replacement program.

Water Conservation Program Coordination and Staffing Support

The City employs an Environmental Projects Manager who services as the water conservation coordinator. Tasks include oversight and implementation of extensive conservation programs, program reporting, and communication of water conservation issues within the City organization and to the public. This manager is assisted by the Environmental Outreach Team that consists of three full-time and three part-time employees. In addition to the water conservation program, this manager also oversees outreach in the areas of solid waste, recycling, wastewater, stormwater and climate change. Under this organizational structure, this robust team is able to direct resources to priority issues. For example, during the drought, the Outreach Team has redoubled its efforts on water conservation. The Environmental Projects Manager also receives additional support from various divisions within the Public Works and

Utilities Department including the Water Operations, Customer Service (metering) and Engineering Divisions.

Other Demand Management Measures

Landscape Consultation Program
The City offers free water audits for residential customers and commercial customers in it Landscape Consultation Program. A licensed landscape irrigation specialist is sent to the property to assess water usage, identify leaks or breaks, re-programs irrigation controllers and recommends specific repairs or retrofits. The customer is also referred to the Water Smart Gardening web-based tool for low-water landscape design ideas. The on-line tool was developed for Watsonville's climate and includes only plants that thrive here with minimal water. It also provides technical assistance on irrigation systems and soil issues as well as local resources including retailers, classes and how to contact certified Green Gardeners. During the Water Consultation Program visit, the customer's indoor water use is also assessed including the toilets, washing machine, showerheads and faucet aerators. Free devices are offered and rebate information is provided.

To identify the top water users in all customer categories, the City performs an annual evaluation of the water usage by customer account. Customers with high usage are offered the free Landscape Consultation, free water-saving devices and rebate information.

Plumbing Fixture Retrofit
Rebates are available to all customers that install high-efficiency toilets that replace toilets using more than 1.6 gallons per flush. The City picks up the old toilet to ensure that it qualifies for the rebate and also to ensure it does not get re-installed at any location. The rebate amount is $100. The City also sponsors a direct-install toilet replacement program in partnership with Central Coast Energy Services. The City's toilet rebate and toilet replacement programs are available to all customers and there is not a limit on the number of toilets per location. For example, in 2014, the City paid for the installation of 45 new toilets in a Housing Authority apartment complex. The toilet rebate and toilet replacement programs do not have income restrictions.

High-Efficiency Clothes Washers
Customers who purchase qualifying high-efficiency clothes washers can receive a City rebate of $100. This program includes washers in laundry rooms of apartment complexes and other high-use locations.

Showerheads, Hose Nozzles, Faucet Aerators, Shower Timers
These devices are offered during the Landscape Water Consultation and at our Nature Center. In both programs, staff ensures that devices meet the customer's need with a high likelihood of effective usage.

Coordination with Local Retailers

The City ensures that the toilet and washer rebate information is available at the point of sale. City staff meets with staff at local retailers such as Home Depot, Orchard Supply, K-Mart and Ace Hardware to provide "shelf talkers" and rebate applications and update store employees on new water conservation programs.

Turf Removal Rebate
In 2014, the Watsonville City Council approved a pilot turf rebate program. In 2015, the program was approved as an ongoing program. To date, 111,000 square feet of lawn have been replaced in the Turf Removal Rebate program.

Conservation Programs for Commercial, Industrial, and Institutional Accounts
The City's Water Pollution Prevention Source Control Program works with commercial and industrial users to reduce water use. Annual inspections of the larger industrial facilities (wastewater flows more than 25,000 GPD) focus on pollution prevention and water conservation. Water use by industrial and large commercial users is measured monthly.

The irrigation systems at City's parks, open space and municipal buildings have undergone complete water use audits. Repairs and improvements are being made to systems on an annual basis with a goal to reach current standards for irrigation equipment. Weather-based irrigation controllers have been installed at four City parks. A 20 percent reduction in Parks irrigation was implemented during the drought and is ongoing for the future.

School Field Trip Program
The City employs one full time credentialed teacher who provides classroom and field trip experiences to local youth. Each year, approximately 3000 students, teachers and parent chaperones participate in the program. The program is matched to the science curriculum and provides real-world experiences to youth. Themes include the source of our water, how it is treated and how to use it wisely. Students visit a surface water intake and a groundwater well and participate in hands-on water filtering and pumping activities. Conservation behaviors, specific to youth, are reinforced.

Classes and Trainings
The City provides funding, along with regional partners, for a series of community classes at the local community college. Classes include landscape design, plant selection, soil management and rainwater harvesting. In 2015, the City sponsored a "Lose Your Lawn" workshop that was attended by 50 residents.

Chapter 10 - Plan Adoption, Submittal, and Implementation

Notice of Public Hearing

CWC 10621(b), CWC 10642

The City contacted the County of Santa Cruz on February 26, 2016 and May 20, 2016 indicating that an UWMP was being revised for 2015. The City notified the City Council of Watsonville on February 26, 2016 indicating that an UWMP was being revised for 2015. Documentation is included in Appendix B. The City Council of Watsonville will hear the UWMP on June 14, 2016.

Table 10-1 Retail: Notification to Cities and Counties

City Name	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
City of Watsonville	☑	☑
County Name *Drop Down List*	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
Santa Cruz County	☑	☑
NOTES: Documentation found in Appendix B.		

CWC 10642, Government Code 6066

The City informed the public in the local newspaper, the Register Pajaronian, dated May 31, 2016 and June 7, 2016 that the 2015 UWMP was available for review. These notifications included the date of a public hearing, June 14, 2016, at City Council, and encouraged the public's participation. In addition, the City's website offered the same information. Appendix B includes copies of the newspaper and website announcements.

Public Hearing and Adoption

CWC 10642, CWC 10608.26

The City Council adopted the 2015 UWMP on June 14, 2016. A copy of the adoption resolution is included in Appendix B.

Plan Submittal

CWC 10621(d), CWC 10644(a)(1), CWC 10635(b)

2015 UWMPs must be submitted to DWR within 30 days of adoption and by July 1, 2016. UWMP submittal will be done electronically through WUEdata, an online submittal tool. After the UWMP has been submitted, DWR will review the plan and make a determination as to whether or not the UWMP addresses the requirements of the CWC. The DWR reviewer will contact the water supplier as needed during the review process. Upon completion of the Plan review, DWR will issue a letter to the agency with the results of the review.

No later than 30 days after adoption, the water agency shall submit a hardcopy of the adopted 2015 UWMP to the California State Library.

No later than 30 days after adoption, the water agency shall submit a copy of the adopted 2015 UWMP to the County of Santa Cruz.

Public Availability

CWC 10645

The 2015 UWMP is available for public review on the City's website (http://cityofwatsonville.org/public-works-utilities/water/urban-water-management-plan).

Amending an Adopted UWMP

CWC 10621(c), CWC 10644(a)(1)

No changes were made to the plan after it was adopted by the City Council on June 14, 2016.