CITY OF TULARE

DRAFT 2015 URBAN WATER MANAGEMENT PLAN

411 East Kern Avenue
Tulare, California 93274

City of Tulare

2015 Urban Water Management Plan

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Chapter 1 - Introduction & Overview

Purpose

The California Water Code requires urban water suppliers within the state to prepare and adopt Urban Water Management Plans (UWMPs) for submission to the California Department of Water Resources (DWR). The UWMPs, which must be filed every five years, must satisfy the requirements of the Urban Water Management Planning Act (UWMPA) of 1983 including amendments that have been made to the Act and other applicable regulations. The UWMPA requires urban water suppliers servicing 3,000 or more connections, or supplying more than 3,000 acre-feet (AF) of water annually, to prepare an UWMP.

The purpose of the UWMP is to maintain efficient use of urban water supplies, continue to promote conservation programs and policies, ensure that sufficient water supplies are available for future beneficial use, and provide a mechanism for response during water drought conditions. This report, which was prepared in compliance with the California Water Code, and as set forth in the 2015 guidelines and format established by the DWR, constitutes the City of Tulare (City) 2015 UWMP.

The City did not participate in an area, regional, watershed, or basin wide UWMP for purposes of assembling the 2015 report. However, the Sustainable Groundwater Management Act (SGMA), adopted by the State of California in 2014, is moving the City and a number of other water suppliers in Tulare County towards that end. The Kaweah Sub basin, which underlies the City of Tulare and much of Tulare County, is identified by the State Department of Water Resources as critically over-drafted. Those extracting water from the sub basin will need to coordinate to achieve a plan that satisfies the requirement of SGMA by 2020. To this end, the City of Tulare has joined with the City of Visalia and the Tulare Irrigation District in a Joint Powers Authority (called the Mid-Kaweah Groundwater Sustainability Agency JPA) (MK-JPA) to achieve compliance with SGMA. Since the MK-JPA's jurisdiction does not extend throughout the entire sub basin it will be necessary to coordinate with others so that the entire sub basin is covered from a regulatory standpoint.

Other entities are working to form the remaining governmental structure to cover the entire Kaweah sub basin. Once this work is complete, the MK-JPA looks forward to coordinating with them on a sub basin-wide solution. Because of the formative stage of this effort very limited specifics are available for the 2015 UWMP report, but the City expects this work to have a significant impact on the 2020 UWMP report. It is quite likely that the latter report will have more of a regional feel to it.

In addition to greater regional effort and increased participation by the City of Tulare in such efforts, the City is taking a revised approach to how it sees its enterprise funds for water and sewer and surface water management (the hydrological enterprises). The City has adopted a business plan that recognizes the hydrological enterprise program.

The proposed strategic business plan for the City of Tulare's Hydrological Enterprise Program (HEP) involves striving for excellence in all aspects of municipal water services and recognizes that water operations are broad in scope and include: all aspects of managing the underground

aquifers where water is stored (the City's water supply), through delivery of potable water to City residents (water deliveries), through recovery of contaminated water (both sewer and surface water), for cleansing to be suitable for re-use and return of the cleansed water for subsequent beneficial re-use. Such excellence is most likely to be achieved through coordinated and comprehensive planning and implementation and controls. See Appendix A

The organizing strategic vision statement is as follows: "The City of Tulare intends to optimally and financially responsibly operate municipal water and natural resources enhancement services over specified time horizons, in a planned fashion." Each phrase above can be thought of as a grouping of strategies and related tactics.

Background

Urban Water Management Planning Act

The following excerpt from the 2015 UWMP Guidebook, published by the State of California, is an excellent summary of the background and history of UWMP efforts.

Water planning is an essential function of water suppliers but becomes critical as California grapples with ongoing drought and expected long-term climate changes.
Prior to the adoption of the Urban Water Management Planning (UWMP) Act, there were no specific requirements that water agencies conduct long-term resource planning. While many water agencies conducted long-term water supply and resource planning prior to the Act, those that did not were left vulnerable to supply disruptions during dry periods or catastrophic events.

An example of local supply disruption that spurred the development of the UWMP Act can be found from the drought of 1976-1977. The Marin Municipal Water District (MMWD) faced dwindling supplies, even though water rationing strategies were successfully implemented. MMWD managers met with officials of other water districts and from the California Department of Water Resources (DWR) to quickly find a reliable alternate source of water. An agreement was reached to transport water from the State Water Project (SWP) via a temporary, 6-mile pipeline on the Richmond-San Rafael Bridge from the East Bay to Marin County.

The necessity of installing this emergency pipeline indicated that water planning had to be done at the local level, as two water agencies in the same region could have very different impacts from a drought. As a result, the UWMP Act was proposed and adopted, requiring a minimum level of resource assessment and planning by water suppliers.

There is no substitute for water planning at the local water supplier level. Only a local supplier has the knowledge, ability to consider the unique circumstances of the individual agency, can provide for participation by the community, and tailor the planning to local conditions.

The UWMP Act has been modified over the years in response to the State's water shortages, droughts, and other factors. A significant amendment was made in 2009, after the drought of 2007-2009 and as a result of the Governor's call for a statewide 20 percent reduction in urban water use by the year 2020. This was the Water Conservation Act of 2009, also known as SB X7-7. This Act required agencies to establish water use targets for 2015 and 2020 that would result in statewide savings of 20 percent by 2020.

The following history will help the reader understand the evolution of the Act and the reporting required for compliance.

In 1983, State Assembly Bill (AB) 797 modified the California Water Code Division 6, by creating the UWMPA. Several amendments to the original UWMPA, which were introduced since 1983, have increased the data requirements and planning elements to be included in the 2005, 2010 and 2015 UWMPs.

Initial amendments to the UWMPA required that total projected water use be compared to water supply sources over the next 20 years, in 5-year increments. Recent DWR guidelines also suggest projecting through a 25-year planning horizon to maintain a 20-year timeframe until the next UWMP update has been completed.

Recent amendments include reframing Demand Management Measures, use of standardized forms and tables, quantification and narratives regarding the distribution system water loss, future water savings, voluntary reporting of energy intensity consumption for the purposes of water production and distribution, and finally defining artificially supplied water features served by the water supplier. Past amendments require that UWMPs include provisions for recycled water use, demand management measures, and a water shortage contingency plan. The UWMPA requires inclusion of a water shortage contingency plan, which meets the specifications set forth therein. Recycled water was added in the reporting requirements for water usage and figures prominently in the requirements for evaluation of alternative water supplies, when future projections predict the need for additional water supplies. Each urban water purveyor must coordinate the preparation of the water shortage contingency plan with other urban water purveyors in the area, to the extent practicable.

In addition to the UWMPA and its amendments, there are several other regulations that are related to the content of the UWMP. In summary, the key relevant regulations are:

AB 1420:
Requires implementation of demand management measures (DMMs)/best management practices BMPs) and meeting the 20x2020 targets to qualify for water management grants or loans.

AB 1465:
Requires water suppliers to describe opportunities related to recycled water use and storm water recapture to offset potable water use.

Amendments Senate Bill (SB) 610 (Costa, 2001), and AB 901 (Daucher, 2001):
Effective beginning January 1, 2002, require counties and cities to consider information relating to the availability of water to supply new large developments by mandating the preparation of further water supply planning (Daucher) and Water Supply Assessments (Costa).

SB 1087:
Requires water suppliers to report single-family residential (SFR) and multi-family residential (MFR) projected water use for lower income areas separately.

Amendment SB 318 (Alpert, 2004):
Requires the UWMP to describe the opportunities for development of desalinated water, including but not limited to, ocean water, brackish water, and groundwater, as long-term supply.

AB 105 (Wiggins, 2004):
Requires urban water suppliers to submit their UWMPs to the California State Library.

SBx7-7:
Requires development and use of new methodologies for reporting population growth estimates, base per capita use, and water conservation. This water bill also extended the 2010 UWMP submittal deadline for retail agencies to July 1, 2011. DWR is still finalizing two of the four new methodologies that an agency can choose from to establish their intermediate (2015) and year 2020 water conservation targets.

SB 1478:
This bill was signed on September 23rd and extends the 2010 UWMP deadline for wholesale agencies to July 1, 2011, as SBx7-7 did for retail agencies.

AB 2067:
Extends by six months the submission date for the 2015 UWMP to July 1, 2016 and also streamlines the Demand Management Measure reporting requirements.

SB 1420:
This legislation requires that terms of and eligibility for water management grants or loans for Urban Water Suppliers are conditional on the suppliers' implementation of Demand Management Measures.

AB 2067, 2014:
Requires water suppliers to provide narratives describing their water demand management measures, as provided. Requires retail water suppliers to address the nature and extent of each water demand management measure implemented over the past 5 years and describe the water demand management measures that the supplier plans to implement to achieve its water use targets. Requires each urban water supplier to submit its 2015 plan to the Department of Water Resources by July 1, 2016.

SB 1420, 2014:
Requires the plan, or amendments to the plan, to be submitted electronically to the department. Requires the plan, or amendments to the plan, to include any standardized forms, tables, or displays specified by the department. Requires a plan to quantify and report on distribution system water loss. Provides for water use projections to display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans, when that information is available and applicable to an urban water supplier.

SB 1036, 2014:
Provides for an urban water supplier to include certain energy related information, including, but not limited to, an estimate of the amount of energy used to extract or divert water supplies.

AB 2409, 2010:
Requires urban water suppliers to analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.

Previous Urban Water Management Plans
Pursuant to the UWMPA, the City previously prepared an UWMP in 2005, which was formally adopted by the City Council on December 2, 2007. The Board of Public Utilities approved the 2010 UWMP on December 6, 2010. This 2015 UWMP report serves as an update to the 2010 UWMP and pulls substantially from that document.

Water Conservation Act of 2009 (SB X7-7) and Grant Funding
The Water Conservation Act of 2009 required retail urban water suppliers to report in their UWMPs their Base Daily per Capita Water Use (Baseline GPCD), 2015 Interim Urban Water Use Target, 2020 Urban Water Use Target, and Compliance Daily per Capita Water Use. These terms are defined in *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use, DWR 2011 (Methodologies)* consistent with SB X7-7 requirements. The *Methodologies* document can be found online at http://www.water.ca.gov/urbanwatermanagement/uwmp2015.cfm.

Beginning in 2016, 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. Guidance for addressing the requirements of the Act is found in Chapter 5 of the Guidebook and in the *Methodologies* document. Retail water agencies are required to set targets and track progress toward decreasing daily per capita urban water use in their service area, which will assist the State in meeting its 20 percent reduction goal by 2020.

Urban Water Management Plans in Relation to Other Planning Efforts
Urban suppliers provide information on water management specific to their service areas. 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 resource plans, Integrated Regional Water Management Plans, Groundwater Management Plans, and others. The City has reviewed the above documents, where they are available for its planning efforts, in preparing this UWMP. The City is a participant in the Kaweah River Basin Integrated Regional Water Management Plan Authority and has considered the contents of that authority's Integrated Regional Water Management Plan adopted in 2015.

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Report Organization

This report is organized according to the recommended format provided in DWR's Guidebook to Assist Urban Water Suppliers to prepare a 2015 Urban Water Management Plan (Guidebook). The UWMP contains ten chapters, followed by appendices that provide supporting documentation for the information presented in the report. The chapters are outlined below:

- 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

/////

Chapter 2 Plan Preparation

Basis for Preparing a Plan

CWC 10617

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

CWC 10620

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

CWC 10621

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

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

The City of Tulare is an Urban Water Supplier as defined by §CWC 10617 –

> *"…a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually."*

Consequently, the City will submit its 2015 Urban Water Management Plan to DWR by July1, 2016.

/////

Public Water System

CWC 10644

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

CWC 10608.52

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

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

California Health and Safety Code 116275

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

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
5410015	City of Tulare	17,485.0	5,001.8
	TOTAL	17,485.0	5,001.8
NOTES:			

The City only supplies one water agency and has reported a total of 17,485 Municipal water connections in 2015 and supplied a total volume of 5,001.8 million gallons of water in FY 2014-2015.

Individual or Regional Planning and Compliance

Table 2-2: Plan Identification	
☑	Individual UWMP
☐	Regional UWMP (RUWMP)
NOTES:	

Individual or Regional Planning and Compliance
The City of Tulare has not participated in a Regional UWMP in the past and elects to continue in developing and submitting individual UWMP's until such time as the law requires otherwise, or necessity requires an alternative reporting method.

However, the City is a member of the newly formed Mid-Kaweah Groundwater Sustainability Agency JPA (MK-JPA) (formed with the City of Visalia and the Tulare Irrigation District) and anticipates a much greater emphasis on regional reporting and coordination with all water suppliers and users in the near future, as contemplated by the Sustainable Groundwater Management Act (SGMA). The City also participates in activities, such as preparation of the Integrated Regional Water Plan, through the Kaweah-River Basin Integrated Regional Management Plan Stakeholder Advisory Group.

As part of the effort to comply with SGMA, City representatives as part of the MK-JPA, have been meeting on a somewhat regular basis with representatives of other water suppliers (or regulators such as the County and Kaweah Delta Water Conservation District) on efforts to coordinate for purposes of a Groundwater Sustainability Plan (GSP) that will cover the entire Kaweah sub basin. Ultimately, these efforts are most likely to lead to focused regional planning and compliance efforts.

Fiscal or Calendar Year and Units of Measure

CWC 1608.20

(a)(1) Urban retail water suppliers…may determine the targets on a fiscal year or calendar year basis.

For the 2015 UWMP, the City has elected to use a fiscal year. This will allow the report to be expedited so that City resources can be more fully devoted to the regional planning efforts taking place in connection with SGMA. The City uses million gallons throughout this UWMP as its units of measure.

/////

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	
1	*July*
Units of Measure Used in UWMP (select one)	
☐	Acre Feet (AF)
☑	Million Gallons (MG)
☐	Hundred Cubic Feet (CCF)
NOTES:	

Coordination and Outreach

The UWMPA requires that the UWMP identify the water agency's coordination with appropriate nearby agencies.

> ***CWC 10620***
>
> *(d)(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.*
>
> ***CWC 10642***
>
> *Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan...*

> ***CWC 10621 (b)***
>
> *Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.*

DWR was contacted to discuss the requirements of the UWMPA and obtain electronic workbooks, checklists, and other developed guidelines to prepare this report. On December 9, 2015, City staff members attended a UWMP workshop in Fresno, California to interface with additional DWR staff and to learn more of the details required to prepare a satisfactory plan. As part of that meeting City staff communicated with others from the region with regard to the regional water issues.

On December 10, 2015, City staff met jointly with staff from both the Tulare Irrigation District (TID) and Kaweah Delta Water Conservation District (KDWCD) during the preparation of this plan in order to provide these agencies with a chance to voice their concerns and to coordinate efforts related to the plan. This meeting took place in City Hall at the City of Tulare.
The City also provided formal written notification to Tulare County, TID, KDWCD, and the Tulare County Local Area Formation Commission (LAFCO) that the City's UWMP was being updated for 2015. In accordance with the UWMPA, this notification was provided to Tulare County at least 60 days prior to the public hearing of the plan. Copies of the final UWMP will be provided to Tulare County no later than 30 days after its submission to DWR.

The City is committed to encouraging the active involvement of diverse social, cultural, and economic elements of its citizenry. The City notified a designated representative from the Home Builders Industry Association during December 2015 about the preparation of the plan. On January 12, 2016, City staff advised the Mid-Kaweah GSA (MK-JPA) Board of its efforts during a public meeting, and on January 22, 2016, the 2015 UWMP draft was presented to the Tulare Board of Public Utilities during a public meeting where, following citizen and board member comment, the UWMP was recommended for approval to the City Council.

The City also provided formal written notification to Tulare County, TID, KDWCD, the City of Visalia and its water purveyor (Cal Water Services), The Tulare Joint Union High School District and the Tulare City Schools District, the Mid-Kaweah Groundwater Sustainability Authority JPA, Tulare County Association of Governments (TCAG), The Tulare Chamber of Commerce, and the Tulare County Local Area Formation Commission (LAFCO) that the City's UWMP was being updated for 2015. In accordance with the UWMPA, this notification was provided to Tulare County at least 60 days prior to the public hearing of the plan. Copies of the final UWMP will be provided to Tulare County no later than 30 days after its submission to DWR. The City of Tulare is its own service provider and its services are dedicated to City of Tulare residents.

The City has no wholesale arrangements (either as a customer or provider) as of the date this UWMP is adopted so there were no required coordination efforts in this regard.

The City is committed to encouraging the active involvement of diverse social, cultural, and economic elements of its citizenry. On February 15, 2016 and February 22, 2016, the City placed a notice in the local newspaper stating that its UWMP was being updated and that a public hearing would be conducted to address comments and concerns from members of the community. The notice stated that a public review and comment period would be held through March 1, 2016. A copy of this notification is included in Appendix B. The Draft 2015 UWMP was made available for public inspection at the City of Tulare City Hall, located at 411 East Kern

Avenue. In addition, the City also posted a copy of the public review draft UWMP on its website (www.ci.tulare.ca.us).

The City held a public hearing on March 1, 2016 at the Tulare Public Library & Council Chambers, located at 491 North "M" Street. The hearing provided an opportunity for the City's customers, residents, and employees to learn and ask questions about the current and future water supply of the City.

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Chapter 3 – System Description

General Description

CWC Section 10631

Describe the service area of the supplier.

The City of Tulare (City) is located along Highway 99 in Tulare County within the Central San Joaquin Valley of California, approximately 45 miles south of Fresno and 60 miles north of Bakersfield (Appendix C-1)

Tulare was founded in 1872 by the Southern Pacific Railroad, and incorporated in 1888. Agriculture is a major component of the City's economy, due to its highly productive farmland. Tulare is attractive to food processors and distributors because of its central location and abundance of locally grown products.

The City limits and Urban Development Boundary (UDB), as established from the City's Land Use Diagram (Updated November 2013), are 20 square miles (12,800 acres) and 37 square miles (23,608 acres), respectively. The current City limits and UDB are shown in appendix C-1.

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Figure 3-1 summarizes the land use designations, along with gross acreages, for the City limits and UDB. The land use classifications are consistent with the Land Use Diagram and Standards described in the City's General Plan Update (Figure 3-2). Not all land within the City is developed. Figure 3-2 also tabulates the existing developed land within the current City limits.

Land Use Designations **Figure 3-1**
2015 Urban Water Management Plan
City of Tulare

Land Use Designations	Land Use Label	Minimum Lot Size	DU per Gross Acre	Maximum FAR
Residential				
Rural Residential	RR	20,000 SF	0.0-2.0	--
Residential Estate	RE	12,500 SF	2.1-3.0	--
Low Density Residential	LDR	4,000 SF	3.1-7.0	--
Medium Density Residential	MDR	6,000 SF	7.1-14.0	--
High Density Residential	HDR	1,500 SF	14.1-29.0	--
Commercial				
Neighborhood Commercial	NC	2 Acres	--	0.6
Community Commercial	CC	7 Acres	--	0.27
Regional commercial	RC	20 Acres	--	0.27
Central Business District	CBD	N/A	0-29.0	3
Service Commercial	SC	10,000 SF	--	0.6
Office Commercial	OC	4,000 SF	--	0.8
Industrial				
Light Industrial	LI	20,000 SF	--	0.6
Heavy Industrial	HI	40,000 SF	--	0.4
Other				
Public/Quasi-Public	PUB	N/A	--	0.6
Parks and Recreation	PR	N/A	--	--
Open Space/Agriculture	A	10 Acres	1 Unit/Lot	--
Mixed Use	MU	N/A	0-29.0	3
Village	V	See Policies under Goal LU-8, Villages		
Transit-Oriented Development	TOD	See policies in Tulare TOD Plan		

Notes: DU = Dwelling Units, FAR = Floor Area Ratio, SF = Square Feet
Source: City of Tulare 2035 General Plan

The existing land uses include 7,205 acres of residential, 2,431 acres of commercial, 2,880 acres of industrial, 356 acres of Parks and Recreation, and 2,375 acres of Public facilities.

Service Area Boundary Maps

District Boundary Maps for Kaweah Delta Water Conservation District and Tulare Irrigation District are available to review in appendices C-2 and C-3.

Service Area Climate

CWC Section 10631

Describe the service area of the supplier, including… climate…

The climate in the City can be classified a Mediterranean-type climate. Summers are hot and dry, and winters are cool with an average precipitation of about 7.83-inches per year. The area is subject to significant variations in annual precipitation. Most of the annual precipitation occurs during the period from November through April. Figure 3-3 summarizes monthly average evapotranspiration (ETo) rates, rainfall and temperature. The average monthly precipitation and average monthly temperatures are also shown on Figure 3-3.

The average annual temperature is 61.16 degrees Fahrenheit (°F), although it is not unusual for summer readings to reach well over 100°F. According to California Irrigation Management Information System (CIMIS), the monthly average mean temperature in July is 79.55 F, with an average maximum of 95.79°F and an average minimum of 63.17°F. Extreme winter lows can reach into the teens.

According to 2010 Census figures, the City's Median Household Income (MHI) in year 2010 was $42,708. The State defines a disadvantaged community as a community with an annual MHI that is less than 80% of the statewide MHI. Using U.S. Census 2010 data, 80 percent of the statewide annual MHI is $48,875. Therefore, the City can be described as a "disadvantaged community."

/////

Climate 2015 Urban Water Management Plan City of Tulare					Figure 3-3
Month	Average Eto (inches)	Average Rainfall (inches)	Average Min. Temperature (°F)	Average Mx. Temperature (°F)	Average Temperature (°F)
January	1.29	1.30	34.61	56.29	44.56
February	1.96	1.23	36.89	61.76	48.81
March	3.67	1.01	40.99	68.39	54.66
April	4.82	0.97	43.75	72.81	58.52
May	6.86	0.38	50.61	83.16	67.27
June	7.72	0.04	56.85	90.39	74.02
July	7.92	0.01	63.17	95.79	79.55
August	7.19	0.00	60.56	94.06	76.99
September	5.36	0.05	55.84	89.97	72.14
October	3.42	0.32	47.05	78.57	61.54
November	1.81	0.77	39.17	65.66	51.24
December	1.17	1.76	34.22	56.56	44.54
Annual	**53.19**	**7.83**	**46.98**	**76.12**	**61.16**
Notes: California Irrigation Management Information System (CIMIS), Station no. 169 Porterville (Period of record 2001-2014)					

Service Area Population and Demographics

CWC Section 10631

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

According to data collected from the California Department of Finance (DOF), the City's population for the year 2015 was approximately 62,363. This corresponds to an increase in population of approximately, 5.2% or 2,828 from 2010 to 2015.

The General Plan Update projects a population of 106,252 people by the year 2035. In order for this to happen, the City's population would need to increase by 2.7 percent per year. Extending this annual growth rate out to 2040 yields a projected population of 121,391, as shown in Table 3-1. SB X7-7 Table 3 shows the historical population trends from 2001 through 2015.

SB X7-7 Table 3: Service Area Population			
Year		Population*	Notes
10 to 15 Year Baseline Population			
Year 1	2001	44,468	
Year 2	2002	45,175	
Year 3	2003	46,312	
Year 4	2004	47,639	
Year 5	2005	48,974	
Year 6	2006	50,676	
Year 7	2007	55,017	
Year 8	2008	56,692	
Year 9	2009	58,013	
Year 10	2010	59,079	
5 Year Baseline Population			
Year 1	2006	50,676	
Year 2	2007	55,017	
Year 3	2008	56,692	
Year 4	2009	58,013	
Year 5	2010	59,079	
2015 Compliance Year Population			
2015		62,363	
*Depending on the method used, the "Population" column is filled from either DOF data, DWR population tool, or manually if using "Other".			
NOTES: DOF method used, Table E8			

Table 3-1 Retail: Population - Current and Projected						
Population Served	2015	2020	2025	2030	2035	2040*(opt)*
	62,363	71,249	81,401	93,000	106,252	121,391
NOTES: Population projections cited from the 2015-2035 City of Tulare General Plan						

Chapter 4 – System Water Use

Recycled versus Potable and Raw Water Demand

Table 4-3 Retail: Total Water Demands						
	2015	2020	2025	2030	2035	2040 *(opt)*
Potable and Raw Water *From Tables 4-1 and 4-2*	5,001.7	6,241.4	7,130.8	8,146.7	9,307.6	10,284.9
Recycled Water Demand *From Table 6-4*	4,053.7	4,864.4	5,837.3	7,004.8	8,405.7	10,086.9
TOTAL WATER DEMAND	9,055.4	11,105.8	12,968.1	15,151.5	17,713.3	20,371.8
NOTES:						

Water Uses by Sector

CWC 10631

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

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.

(G) Sales to other agencies.

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

(I) Agricultural…

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

The City's water customers include residential, commercial, institutional, and industrial groups. Effective September 1, 2009, the City passed Resolution No. 09-01 that described updated water rates and meter installation requirements. The resolution states that minimum one inch metered service will be installed to all multi-family, commercial, or industrial lots, and to single-family residences constructed after January 1, 1992. The City had only no unmetered service connections in 2015 compared to 42 in 2010[1]. By 2013 the City had installed meters on all the parks and city facilities. The City also meters all commercial and industrial users.

[1] Source: DWR Public Water System Statistics for the City of Tulare, year 2010.

Table 4-1 Retail: Demands for Potable and Raw Water - Actual			
Use Type *Drop down list* *May select each use multiple times* *These are the only Use Types that will be recognized by the WUEdata online submittal tool*	2015 Actual		
	Additional Description *(as needed)*	Level of Treatment When Delivered *Drop down list*	Volume
Single Family		Drinking Water	2,421.7
Multi-Family		Drinking Water	347.8
Other	Commercial, Institutional & Governmental	Drinking Water	749.6
Industrial		Drinking Water	1,231.1
Landscape		Drinking Water	251.6
		TOTAL	5,001.7
NOTES:			

Table 4-2 Retail: Demands for Potable and Raw Water - Projected						
Use Type *Drop down list* *May select each use multiple times* *These are the only Use Types that will be recognized by the WUEdata online submittal tool*	Additional Description *(as needed)*	Projected Water Use *Report To the Extent that Records are Available*				
		2020	2025	2030	2035	2040-opt
Single Family		3,097.8	3,539.2	4,043.4	4,619.6	5,104.7
Multi-Family		448.0	511.8	584.7	668.1	738.2
Other	Commercial, Institutional, Governmental	1,033.9	1,181.3	1,349.6	1,541.9	1,703.8
Industrial		1,463.4	1,672.0	1,910.2	2,182.4	2,411.5
Landscape		198.3	226.5	258.8	295.7	326.7
	TOTAL	6,241.4	7,130.8	8,146.7	9,307.6	10,284.9
NOTES:						

Distribution System Water Losses

CWC 10631

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

(J) Distribution system water loss

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

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

Table 4-4 Retail: Water Loss Summary Most Recent 12 Month Period Available
(as calculated in Appendix L worksheet)

Reporting Period Start Date (Month/Year)	Loss
Jan-15	*222.226*
NOTES:	

Additional water uses and losses in the City's service area are presented in Table 4-4. According to the City's 2005 UWMP, system losses are estimated to account for roughly 3 to 6 percent of the City's total water production based on results from a leak detection survey performed in 1997 by Utility Services Associates. The City regularly uses a comparison analysis of total water pumped to water metered to determine its system losses on a monthly basis. Analysis of the metered water use and the estimated unmetered water use for 2010 indicated that losses accounted for roughly 12 percent of the City's total production, but this also included unmetered City parks and other facilities. Recent internal City analysis of data puts the last 12 month's leakage loss at 6.3%. The 2015 UWMP requires utilizing the AWWA methodology for determining system losses and goes into greater detail with many more assumptions in the formula. The AWWA system loss methodology for the 2015 UWMP estimates system losses of 222.2 MG, or 3.9% of total production for FY2015. The City has recently replaced the large diameter meters on 19 of its highest consumption industry users to minimize meter inaccuracy on those accounts and is developing a plan to implement ongoing system audits to further identify and reduce system losses.

Estimating Future Water Savings

CWC 10631

(e)(4)(A) If available and applicable to an urban water supplier, water use projections may display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.

(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following: (i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections. (ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.

Future water savings have not been included in future water use projections. After spending many years on the same water conservation stage, The City recently changed water conservation stages in June of 2015. Despite best efforts to quantify the new demand it is unclear about the full extent of conservation savings this new stage will produce.

Table 4-5 Retail Only: Inclusion in Water Use Projections	
Future Water Savings Included Y/N	No
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_____
Lower Income Residential Demands Included	Yes
NOTES:	

Water Use for Lower Income Households

CWC 10631.1

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

California Health and Safety Code 50079.5

(a) "Lower income households" means persons and families whose income does not exceed the qualifying limits for lower income families… In the event the federal standards are discontinued, the department shall, by regulation, establish income limits for lower income households for all geographic areas of the state at 80 percent of area median income, adjusted for family size and revised annually.

Section 10631.1 (a) of the California Water Code requires that retail urban water suppliers include projected water use for lower income single family and multifamily households. Section 50079.5 of the Health and Safety Code defines lower income households as 80 percent of the median income, adjusted for family size.

The City of Tulare 2020 Five Year Consolidated Plan (draft) identifies a total of 7,185 (41.4% of total households) low income (<80% of AMI) housing units within the City of Tulare. These are Single Family as well as Multi-Family units. In 2015 the City averaged over 4,000 active low income Single Family water utility accounts and over 450 active multi-family water utility accounts. Figure 4-1 projects water demands associated with lower income water users through year 2040. It should be noted that the lower income demand projections are included in the total water use projections provided in Table 4-1 through Table 4-3.

Low Income Projected Water Demands **Figure 4-1**
2015 Urban Water Management Plan
City of Tulare

Low Income Water Demands	Water Use (MG)					
	2015	2020	2025	2030	2035	2040
Single Family Residential	1,255	1,360	1,650	2,001	2,440	2,952
Multi-Family Residential	162	176	213	259	315	382
Total (MG)	**1,417**	**1,536**	**1,863**	**2,260**	**2,755**	**3,334**

Notes: Source City of Tulare 2020 Five Year Consolidated Plan

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Chapter 5 – SBX Baselines and Targets

This chapter describes the baseline (base daily per capita) water use, the interim and urban water use targets, water system demands, water demand projections, and the water use reduction plan. During preparation of the 2010 UWMP the City, after exploring the possibility of using each of the State-suggested methodologies, decided to use Method 1 (briefly described below) to set its required target. The water use targets selected in 2010 (2015 water use target of 272.7 gpcd and 2020 water use target of 242.4 gpcd) continue to meet the State's requirements and will not be updated in this 2015 UWMP. More in depth discussion of each method (including those not used by the City) can be found in the State guidelines for preparation of Urban Water Management Plans and in the City's 2010 UWMP.

Guidance for Wholesale Agencies

For purposes of identifying baselines and targets, the following definition applies:

CWC 10608.12

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

CWC 10608.36

Urban wholesale water suppliers shall include in the urban water management plans… an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.

The UWMP requires retail water agencies that receive wholesale water to report the projected water demand data that was sent to each wholesale agency from which it receives water.
The City is not supplying water wholesale at this time. The City has received notices from the State of California (SB 88 Notices) regarding the State's intention that the City consolidate two County areas near its City limits. Under the law, consolidation can occur by wholesale arrangements, but has not yet been completed.

The City is involved in litigation in relation to one of these County areas. The litigation is for a declaration by the court of the parties' rights and obligations under a purported agreement for the City to supply retail water service outside of its City limits. The City asks for a declaration regarding its jurisdiction to provide such services and for clarification of other ambiguities and uncertainties in the purported agreement.

The City does not currently receive water from a wholesale water agency, nor does it have any plans to do so in the future. At this time, the City can only state the above facts with regard to the possibility of wholesaling water in the future.

/////

CWC 10608.20

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

Methodologies DWR 2011, Methodology 2 Service Area Population

Page 27 - Water suppliers may revise population estimates for baseline years between 2000 and 2010 when 2010 census information becomes available. DWR will examine discrepancy between the actual population estimate and DOF's projections for 2010; if significant discrepancies are discovered, DWR may require some or all suppliers to update their baseline population estimates.

SB X7-7 Verification Forms

See Appendix D

Baseline Periods

CWC 10608.20

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

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

The Urban Water Management Planning Act (UWMPA) requires that the Urban Water Management Plan (UWMP) identify a baseline water demand, urban water use target, and interim urban water use target for the City of Tulare (City).

The base daily per capita use is the first step in determining the City's various urban water use targets over the planning horizon. The base period per capita use sets the "baseline" on which the urban and interim water use targets are determined. These targets are necessary to judge compliance with the 2020 use reductions set forth in the Water Conservation Bill of 2009. The baselines targets summarized in this section apply specifically to the City. The California Department of Water Resources (DWR) allows agencies to participate in regional alliances in which water use baselines and targets are determined regionally, provided certain criteria are met. The City has elected not to participate in such an alliance.

The City complied with CWC section 10608.20, quoted above, in its 2010 UWMP. The City is not updating its water targets as part of this 2015 UWMP.

Determination of the 10-15 Year Baseline Period (Baseline GPCD)

CWC 10608.12

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

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

(2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the calculation described in paragraph (1) up to an additional five years to a maximum of a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

The City completed the above estimates in its 2010 UWMP using the 15-year period ending in 2010.

Determination of the 5-year Baseline Period (Target Confirmation)

SB X7-7 Table-1: Baseline Period Ranges

Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	6,362	Million Gallons
	2008 total volume of delivered recycled water	0	Million Gallons
	2008 recycled water as a percent of total deliveries	0%	percent
	Number of years in baseline period[1]	10	years
	Year beginning baseline period range	2000	
	Year ending baseline period range[2]	**2010**	
5-year baseline period	Number of years in baseline period	5	years
	Year beginning baseline period range	2005	
	Year ending baseline period range[3]	**2010**	

[1]If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period.

[2]The 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.

NOTES:

The first step in developing the baseline water use for the City is determining the applicable range and years for which the baseline average will be calculated. The UWMPA stipulates an agency may use either a 10 or 15-year average to determine their baseline. If 10 percent or more of total urban retail water deliveries in 2008 were from recycled water, then the agency can use a 15-year average baseline if it chooses. Although the City does recycle its wastewater effluent on City-owned land and through contracts with local farmers, the City does not currently use recycled water to offset urban retail water use. For this reason, a 10-year average was used for baseline determination. In addition to the 10-year baseline, a 5-year baseline was also calculated, which was used in the 2010 UWP to establish the minimum criteria for the City's use reduction targets. A summary of the 2008 total and recycled water deliveries, 10-year baseline range, and 5-year baseline range is included in SBX7-7 Table 1.

Service Area Population

CWC 10608.20

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

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

CWC10644

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

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
NOTES:	

The City complied with the above CWC section requirements in its 2010 UWMP.

Gross water Use

CWC 10608.12

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

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

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

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

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

California Code of Regulations Title 23 Division 2 Chapter 5.1 Article

Section 596 (a) An urban retail water supplier that has a substantial percentage of industrial water use in its service area is eligible to exclude the process water use of existing industrial water customers from the calculation of its gross water use to avoid a disproportionate burden on another customer sector.

Gross Water Tables

There are several tables associated with Gross Water Use calculations. They can be found in the Appendices with the SB X7-7 verification forms and tables.

Indirect Recycled Water Use Deduction

There is insufficient data available for the City to be able to calculate Indirect Recycled Water use volumes or to determine if indirect recycled water use is sufficient to qualify for deductions.

Process Water Use Deduction

There is insufficient data available for the City to be able to calculate Process Water Use volumes or determine if process water use is a quantifiable deduction for the purposes of this document. The City does not currently collect or request process water use records from the private sector industries within the service area. Therefore, the City is unable to include them and calculate a process water use deduction.

The City *does* keep records of the consumption of particular industrial customers that are considered 'industrial agriculture' consumers where a significant portion of their water consumption is used in the manufacture of agricultural commodities. The City is currently in compliance in deducting this consumption from its overall water consumption reports as mandated by the State to monitor conservation efforts.

Baseline Daily per Capita Water Use

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Annual Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	2001	44,468.0	4,741.4	292.1
Year 2	2002	45,175.0	5,157.7	312.8
Year 3	2003	46,312.0	5,317.5	314.6
Year 4	2004	47,639.0	5,806.2	333.9
Year 5	2005	48,974.0	5,641.4	315.6
Year 6	2006	50,676.0	5,787.7	312.9
Year 7	2007	55,017.0	6,148.3	306.2
Year 8	2008	56,692.0	6,081.1	293.9
Year 9	2009	58,013.0	6,018.1	284.2
Year 10	2010	59,079.0	5,689.7	263.9
10-15 Year Average Baseline GPCD				**303.0**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2006	50,676.0	5,787.7	312.9
Year 2	2007	55,017.0	6,148.3	306.2
Year 3	2008	56,692.0	6,081.1	293.9
Year 4	2009	58,013.0	6,018.1	284.2
Year 5	2010	59,079.0	5,689.7	263.9
5 Year Average Baseline GPCD				**292.2**
2015 Compliance Year GPCD				
2015		62,363.0	5,824.9	255.9

/////

2015 and 2020 Targets

CWC 10608.20

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

CWC 10608.20

(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan...

Select and Apply Target Method

The Water Conservation Act of 2009 (SBx7-7) is the law governing water conservation in California that was enacted November 2009. This law requires that all water suppliers increase water use efficiency with the overall goal to decrease per-capita consumption within the state by 20 percent. The bill required DWR to develop certain criteria, methods, and standard reporting forms through a public process that can be used by water suppliers to establish their baseline water use and determine their water conservation targets (the UWMPA requires urban water suppliers to determine the urban and interim water use targets for 2020 and 2015, respectively). DWR provided four different methods to establish water conservation targets.

As described above, the City used Method 1 (described in some detail below) in its 2010 UWMP to determine its water usage targets. The other three methods are mentioned briefly for context purposes only. The City has elected to neither to change its method selection nor to update its previously adopted water usage target in this 2015 UWMP.

Target Method 1 (City Elected Method)

The 2020 water conservation target of Method 1 is defined as a 20 percent reduction of average per-capita demand during the 10-year continuous baseline period. Based on the daily per capita use of 303 gallons per capita per day (gpcd) determined in SBX7-7 Table 5, the target use for Method 1 is 272.7 gpcd. The 2015 interim water use target is simply the average of the baseline and the 2020 water conservation target, or 242.4 gpcd for Method 1 in the City's case.

Target Method 2 (Not Used by City)

The 2020 water conservation target of this method is determined by calculating efficiency standards for indoor use separately from outdoor use for residential sectors, and an overall reduction of 10 percent for commercial, industrial, and institutional (CII) sectors to then create a conservation target.

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Target Method 3 (Not Used by City)
This method uses the ten regional urban water use targets for the state. Based on the water supplier's location within one of these regions, a static water use conservation target for 2020 is assigned.

Target Method 4 (Not Used by City)
Method 4 identifies water savings obtained through identified practices and subtracts them from the base daily per capita water use value identified for the water supplier. The water savings identified in certain categories can be used to reduce the base daily per capita water use value.

Based on all the available data to perform the requisite calculations, the City of Tulare has elected to continue to utilize Method 1 as its preferred 2020 conservation target methodology. This is the same method as was identified in the 2010 Urban Water Management Plan previously.

5-year Baseline – 2020 Target Confirmation

CWC 10608.22

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

SBX7-7 Table 7-F confirms that the target 242.4 gpcd is no more than 95% of the 5 year baseline gpcd of 292.2.

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target

5 Year Baseline GPCD *From SB X7-7 Table 5*	Maximum 2020 Target*	Calculated 2020 Target *Fm Appropriate Target Table*	Confirmed 2020 Target
292.2	277.6	242.4	242.4
** Maximum 2020 Target is 95% of the 5 Year Baseline GPCD*			
NOTES:			

Interim Urban Water Use Target
The interim urban water use target has been calculated as the mid-point value between the 10-15 year Baseline gpcd identified in SBX7-7 Table 5 and the confirmed 2020 target. The 10-15 year baseline is 303.0, the 2020 confirmed target is 242.4 gpcd, as identified in SBX7-7 Table 7-F, and the 2015 Interim target is 272.7 as identified in Table 5-1.

Baselines and Targets Summary

2015 Compliance Daily per Capita Water Use

CWC 10608.12

(e) "Compliance daily per-capita water use" means the gross water use during the final year of the reporting period...

CWC 10608.24

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

CWC 10608.20

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

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

Baseline Period	Start Years	End Years	Average GPCD	2015 Interim Target	Confirmed 2020 Target
10-15 year	2000	2010	303.0	272.7	242.4
5 Year	2005	2010	292.2		
NOTES:					

Meeting the 2015 Target

SB X7-7 Table 9: 2015 Compliance

2015 Interim Target GPCD *Fm SB X7-7 Table 8*	2015 Actual GPCD *Fm SB X7-7 Table 5*	Adjustments			In Compliance? Y/N
		Extraordinary Events	Weather Normalization	Economic Adjustment	
272.7	255.9	*From Methodology 8 (Optional)*	*From Methodology 8 (Optional)*	*From Methodology 8 (Optional)*	YES
NOTES:					

/////

2015 Adjustments to 2015 gross Water Use

CWC 10608.24

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

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

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

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

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

Methodology Document, Methodology 4

This section discusses adjustments to compliance-year GPCD because of changes in distribution area caused by mergers, annexation, and other scenarios that occur between the baseline and compliance years.

Insufficient historical data prevents the City from determining if any adjustments to gross water use are quantifiable or necessary.

Regional Alliance

The City of Tulare is not participating in a Regional UWMP.

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Chapter 6 – System Supplies

The Urban Water Management Planning Act (UWMPA) requires that the Urban Water Management Plan (UWMP) include a description of the agency's existing and future water supply sources for the next 20 years. The description of water supplies must include detailed information on the groundwater basin such as water rights, determination if the basin is in overdraft, adjudication decree, and other information from the groundwater management plan.

Table 6-8 Retail: Water Supplies — Actual

Water Supply *Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool*	Additional Detail on Water Supply	2015		
		Actual Volume	Water Quality *Drop Down List*	Total Right or Safe Yield *(optional)*
Groundwater		5,001.7	Drinking Water	0
Surface water		0	Raw Water	0
Recycled Water		4,053.70	Recycled Water	0
Total		9,055.4		0
NOTES:				

Purchased or Imported Water

The City of Tulare does not purchase or import water supplies at this time, nor does it anticipate doing so within the next five years. However, through an agreement with the Tulare Irrigation District, the City cooperatively purchases Federal Water Project surplus waters during wet years through the Friant-Kern canal system for recharge using a large recharge basin located in the county, to the northeast of the City.

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Table 6-9 Retail: Water Supplies — Projected											
Water Supply *Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool*	Additional Detail on 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		6,241.4	6,241.4	7,130.8	7,130.8	8,146.8	8,146.8	9,307.6	9,307.6	10,284.9	10,284.9
Surface water			0		0	0	0	0	0	0	0
Recycled Water		4,864.4	0	5,837.3	0	7,004.8	0	8,405.7	0	10,086.9	0
	Total	11,105.8	6,241.4	12,968.1	7,130.8	15,151.6	8,146.8	17,713.3	9,307.6	20,371.8	10,284.9
NOTES:											

Groundwater

For planning purposes, the Department of Water Resources (DWR) has subdivided the State of California into ten separate hydrologic regions, corresponding to the State's major drainage basins. The City is located within the Tulare Lake Hydrologic Region.

Groundwater within the State is divided into distinct groundwater basins, some of which are further divided into smaller interconnected sub basins. This section summarizes the groundwater basin underlying the City.

Basin Description

CWC 10631

(b) *If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:*

(2) *A description of any groundwater basin or basins from which the urban water supplier pumps groundwater.*

The groundwater underlying the City is located within the larger San Joaquin Valley Groundwater Basin (Basin), specifically located within the Kaweah Groundwater Sub basin (Sub basin). The Basin contains multiple interconnected sub basins that transmit, filter, and store water, including the Kings, Kern County, Kaweah, Tulare Lake, Tule, Pleasant Valley, and Westside groundwater sub basins. The Sub basin lies between the Kings Groundwater Sub basin to the north, Tule Groundwater Sub basin to the south, crystalline bedrock of the Sierra Nevada foothills to the east, and Tulare Lake Groundwater Sub basin to the west.

According to the DWR Bulletin 118, the Sub basin (Groundwater Sub basin Number 5-22.11) has a surface area of approximately 446,000 acres (696 square miles) in Tulare County and Kings County. The Sub basin generally comprises the land within the Kaweah Delta Water Conservation District (KDWCD). The two major rivers overlying the Sub basin are the Kaweah and St. Johns Rivers, with the Kaweah River being the primary source of natural recharge to the area. The hydrogeology of the Sub basin is derived from the marine and continental sediments of the San Joaquin Valley. The trough structure of the valley creates the depositional axis around which a series of rivers, lakes, sloughs, and marshes are located. The valley structure also marks the current and historic surface drainage in the San Joaquin Valley. Groundwater flow is generally southwestward.

According to DWR, the groundwater in the Basin is generally of a calcium carbonate type. Total dissolved solids (TDS) values range from 35 to 1,000 mg/L, with a typical range of 300 to 600 mg/L. The Sub basin does have localized water quality impairments, including high nitrate pollution on the eastern side of the Basin. High saline water is also an issue between Lindsay and Exeter.

The Kaweah Groundwater Sub basin is not an adjudicated groundwater basin. DWR has assigned the sub basin a 'Type B' groundwater budget, which means that enough data is available to estimate groundwater extraction to meet local water needs, but not enough data is available to characterize the groundwater budget.

State DWR has determined that the Kaweah Sub basin is one of many in the Central Valley that is critically over-drafted. As such it is subject to the provisions of the Sustainable Groundwater Management Act and a plan to eliminate the over-drafting of the sub basin must be submitted and approved by DWR by 2020.

Water Storage

DWR estimated the total storage capacity of the Sub basin and the amount of water in storage as of 1995 using an estimated specific yield of 10.8 percent and historic water level measurements. Based on these 1995 calculations, the total storage capacity of the Sub basin is estimated to be 15,400,000 acre-feet (AF) to a depth of 300 feet (ft.) and 107,000,000 AF to the base of fresh groundwater. These same calculations give an estimate of 11,600,000 AF of groundwater to a depth of 300 ft. stored the Sub basin as of 1995. A 1961 estimate of the water storage in the Sub basin was 34,000,000 AF to a depth of less than 1,000 ft.

In its 2010 update to its GWMP, the Tulare Irrigation District (TID) estimated that for its 72,000-acre service area (which includes the City), there is 8,900,000 AF of storage capacity between the groundwater table and a depth of 20 ft. below ground surface. This is based on an average specific yield of about 10 percent and an assumed average groundwater depth of about 135 ft. there is currently a GWMP update being drafted, though it is not yet complete at the time of this writing.

Groundwater Management

CWC 10631

(b)...If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier... or any other specific authorization for groundwater management.

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

The City has not prepared a groundwater management plan (GWMP). However, two groundwater management stakeholders, whose boundaries surround the City, do maintain current ground water management plans. These water agencies are the Tulare Irrigation District (TID) and the Kaweah Delta Water Conservation District (KDWCD). Maps of these district and water service boundaries are included in Appendices C-2 and C-3. The groundwater management plans of both agencies share common goals and discussions. While the KDWCD GWMP focuses on regional groundwater issues, TID's GWMP focuses on groundwater issues unique to the district service area. Both GWMPs are important resources in the groundwater management of the region. Currently both of these GWMP's have updates under development, though they are not yet available at the time of this writing.

Recognizing their common interests, the TID and KDWCD signed a Memorandum of Understanding (MOU) regarding groundwater management in the areas of overlap between the agency boundaries. TID, City of Tulare and City of Visalia have signed a Joint Powers Agreement and submitted official notice to the State Water Resource Control Board of their intent to form a Groundwater sustainability Agency which will retain the authority to manage the groundwater underlying the City of Tulare, TID, and City of Visalia. A Groundwater Sustainability Plan will be developed in the future, after the remaining portions of the Sub-Basin form additional GSA's. At that time the manner and type of coordination between GSA's will determine whether entities create a single GSP, or if each GSA will be responsible for their own GSP, which are then coordinated to regulate the entire basin. This Mid-Kaweah Groundwater Sustainability Agency JPA is functioning with its own Board and is progressing on the tasks connected with compliance with the Sustainable Groundwater Management Act (SGMA).

Kaweah Delta Water Conservation District

The KDWCD is a regional water management agency that covers 340,000 acres, including lands in both Tulare County and Kings County, and all of TID. The KDWCD was formed under the provisions of the Water Conservation District Act of 1927. The KDWCD GWMP was originally prepared and implemented in response to 1992 state legislation AB 3030, and was updated in 2006 in response to SB 1938, more recent Water Code interpretation, and discussion within DWR's Bulletin 118. The KDWCD GWMP covers all land within its boundaries, except for land within the boundaries of a local agency that elects to not be included.

KDWCD's GWMP recognizes that continued conjunctive management of water supplies within its area is a vital element in achieving hydrologic equilibrium. Therefore, the purpose of the GWMP is to develop supply management strategies that will retain existing surface and groundwater supplies within the district's area for future beneficial use.
A copy of the KDWCD's 2006 GWMP Update is included as a CD in Appendix E.

Tulare Irrigation District
TID is a political subdivision of the State of California operating under the California Water Code. The district was formed in 1889 as a conjunctive use district to manage, supply, and deliver water to growers within TID. TID has conjunctively utilized Kaweah River waters and groundwater since the early 1940s. TID's imported water contract supply includes a large quantity of Class 2 entitlement, a supplemental supply used largely for groundwater recharge within the Friant Unit service area.

TID surrounds but does not contain the City. The City's growth has accounted for exclusions of land from the TID due to conversion of farmland to developed urban area. TID and the City have an agreement that requires the City to pay TID tax assessments on any land space removed from TID by the City. As the City continues to grow into the district, these areas will convert from agricultural land to urban space, and will not be served by TID.

The groundwater information presented in this plan is based on the information presented in the TID 2010 GWMP. Because of TID's focus on groundwater management of the area directly surrounding the City, the City's groundwater management strategies are in line with those presented in the TID GWMP. As two responsible agencies for the sustainable planning of the Sub basin's groundwater resources underlying their jurisdictions, the City and TID must have common and cohesive goals.

TID's GWMP documents the existing groundwater management efforts of TID and planned efforts to improve groundwater management. In addition, the GWMP identifies primary goals and objectives which were developed by TID to address specific groundwater needs and challenges. These include:

- Address potential changes in local hydrology.
- Preclude surface water or groundwater exports that would reduce long-term reliability of groundwater.
- Maintain local management of groundwater resources.
- Implement a groundwater monitoring program to indicate future water supply issues.
- Stabilize groundwater levels.
- Develop groundwater storage facilities.
- Maximize use of surface water sources.
- Minimize future land subsidence.
- Prevent groundwater degradation.

TID maintains an active conjunctive use program. According to TID, the most viable methods of maintaining the district's groundwater basin is through a continuation of their "in-lieu" recharge program. The in-lieu method of recharge relies on the maximum use of available surface water

so that minimum extraction of groundwater occurs. For this reason, TID is contracted for Class 1 and Class 2 water supply on the Friant Unit of the Central Valley Project (CVP). Between CVP and local surface water supplies, TID has attempted to maintain a relatively stable depth to groundwater in the area. Drought conditions, however, typically result in increased depths to groundwater in spite of TID's extensive groundwater recharge activities.

A copy of TID's 2010 GWMP is included as in Appendix F.

Overdraft Conditions

CWC 10631

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

Historical Groundwater Pumping

CWC 10631

(b) ...If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

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

Table 6-1 Retail: Groundwater Volume Pumped

☐	Supplier does not pump groundwater. The supplier will not complete the table below.					
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
Alluvial Basin	Tulare Lake	5,693.7	6,000.8	6,362.0	5,875.6	5,824.9
TOTAL		5,694	6,001	6,362	5,876	5,825
NOTES:						

Surface Water
None of the City's direct potable water deliveries are currently supplied through surface water. The City is not adjacent to a free flowing waterway so that such a strategy would be reliable. However, the City and TID have entered into an agreement whereby the City pays TID, based on its extractions, an amount for purchase of surface water through water rights held by TID. Such purchased water is then used in a groundwater recharge basin outside of the City limits, but inside TID's jurisdictional boundaries. The City has a 75% contractual interest in the recharge basin and due to its upgrade location it is believed that the recharged water flows into the City's pumping zone. See Appendix K.

Under the City's hydrological enterprise program, the City has also invested significantly in its in-town detention basins to increase their recharge capacity. Recharges have not yet been measured, but the City plans to acquire the capability to do so as part of the measurements required by SGMA related to groundwater management. These 39 basins, previously only viewed as flood control basins, are now part of a year-round effort to collect all surface water (run-off and from storm events) and to recharge the basin.

Storm water
As described above, the City is accentuating efforts to increase the recharge capacity of its own basins and to take advantage of a basin outside of town that it co-owns with TID. Additionally, the City is increasing its potential capacity to recharge storm water by exploring the use of large basins at its wastewater treatment plan formerly used for sludge storage. Under the hydrological enterprise program, the focus of all operating storage is the water and a respect for the amount of water that can be recovered for beneficial use in the hydrologic cycle.

Wastewater and Recycled Water

CWC 10633

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

After treatment, the City's treated wastewater effluent is distributed to either evaporation/percolation ponds or to nearby farmland for irrigation of food and non-food crops. Although the water used for irrigation does not offset water that would be used by the City for municipal use, it does reduce the amount of water used by farmers in the area that would otherwise come from surface water and/or groundwater sources. For the purposes of this UWMP, only the wastewater flow used for irrigation is considered "recycled water."

Wastewater Collection, Treatment, and Disposal

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

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

The City's wastewater management system is comprised of two separate collection systems and treatment chains, including one for domestic wastewater flow and another for industrial wastewater flow. The Industrial Wastewater Treatment Plant (IWWTP) and Domestic Wastewater Treatment Plant (DWWTP) have a combined effluent flow of about 11 MGD. Treated effluent is sent to evaporation/percolation ponds or to farmland for irrigation of crops. All of the City's wastewater is considered un-disinfected secondary-treated water, and does not meet California Code of Regulations Title 22 (Title 22) requirements for disinfected secondary or tertiary-treated water.

Table 6-3 summarizes the 2015 recycled water deliveries from the City's WWTP. A comparison of the 2015 actual volumes to the 2010 projected volumes is found in Table 6-5.The difference in the actual 2015 recycled water use and the 2010 UWMP projected recycled water use is due to the change in general economic conditions. While the economy improved and industrial production increased, conservation and drought concerns assisted in preventing the volume from being significantly higher than projected. The volume of recycled water estimated for agricultural irrigation in the 2015 UWMP represents the total wastewater effluent flows and is not separated from storage pond application.

Table 6-2 Retail: Wastewater Collected Within Service Area in 2015						
Percentage of 2015 service area covered by wastewater collection system *(optional)*						**100%**
Percentage of 2015 service area population covered by wastewater collection system *(optional)*						**100%**
			Receiving Wastewater Treatment			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected in 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party? *(optional)*
City of Tulare	*Metered*	4,053.7	*City of Tulare*	City of Tulare Wastewater Treatment Facility	*Yes*	*No*
Total Wastewater Collected from Service Area in 2015:		4,053.7				
NOTES:						

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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.									
							2015 volumes			
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number	Method of Disposal	Does This Plant Treat Wastewater Generated Outside	Treatment Level	Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
City of Tulare Wastewater Treatment Facility	Adjacent Agricultural Land	Non-potable agriculture	N/A	Land disposal	No	Secondary, Un-disinfected	4,053.7	4,053.7	0	0
						Total	4,053.7	4,053.7	0.0	0.0
NOTES:										

Recycled Water System

CWC 10633

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

Recycled Water Beneficial Uses

CWC 10633

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

CWC 10633

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

After treatment, the City's treated wastewater effluent is distributed to either evaporation/percolation ponds or to nearby farmland for irrigation of food and non-food crops. Although the water used for irrigation does not offset water that would be used by the City for municipal use, it does reduce the amount of water used by farmers in the area that would otherwise come from surface water and/or groundwater sources. For the purposes of this UWMP, only the wastewater flow used for irrigation is considered "recycled water." Table 6-4 summarizes the 2015 recycled water deliveries from the City's WWTP. No recycled water is used for urban irrigation or other urban purposes.

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 *These are the only Use Types that will be recognized by the DRW online submittal tool*		General Description of 2015 Uses	Level of Treatment *Drop down list*	2015	2020	2025	2030	2035	2040 (opt)
Agricultural irrigation		crop irrigation	Secondary, Un-disinfected	4,054	4,864	5,837	7,005	8,406	10,087
Landscape irrigation (exec 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									
Other	*Type of Use*								
			Total:	4,053.7	4,864	5,837	7,005	8,406	10,087
IPR - Indirect Potable Reuse									
** This may include use outside the UWMP area that is NOT included in another UWMP area. It is to be noted in the general description cell.*									

NOTES:

Planned versus Actual Use of Recycled Water

CWC 10633

(e) (Provide) a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

The 2010 Urban Water Management Plan projected recycled water use volumes of 3,474.5 MG for 2015 for agricultural irrigation purposes. The beneficial use of the recycled water has remained the same, however, the actual use has exceeded projections. The 2015 actual recycled water use is 4,053.7 MG, an increase of 16.6%, or 579.15 MG over the 2010 projections. This can be accounted for primarily by population growth and industrial production growth from 2010 to 2015.

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 *These are the only Use Types that will be recognized by the WUEdata online submittal tool*		2010 Projection for 2015	2015 actual use
Agricultural irrigation		3,474.5	4053.7
Landscape irrigation (exec 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			
Other	*Type of Use*		
	Total	3,474.5	4,053.7

NOTES:

Actions to Encourage and Optimize Future Recycled Water Use

CWC 10633

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

CWC 10633

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

The City is not currently planning to change its recycled water use in the near term in favor of optimizing and improving efficacy and effectiveness of its groundwater pumping and transmission system. Given the current high percentage usage of treated wastewater for agricultural purposes (which usage lessens pumping on the same sub basin from which the City otherwise extracts water for service delivery) there is no cost or practical or hydrological benefits to increasing such recycling use.

Table 6-6 Retail: Methods to Expand Future Recycled Water Use

Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
None	N/A	2015	0
		Total	0
NOTES:			

Desalinated Water Opportunities

CWC 10631

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

The groundwater that underlies the City is not brackish in nature and does not require desalination. However, the City could provide financial assistance to other purveyors in exchange for water supplies. Should the need arise, the City could consider this option.

Because the City is not located in a coastal area, it is not practical nor economically feasible to implement a seawater desalination program. However, the City could provide financial assistance to other purveyors in exchange for water supplies. Should the need arise, the City could consider this option.

Exchanges or Transfers

CWC 10631

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

Currently, no long-term contracts or formal agreements for specific exchanges or transfers are in place.

However, the City has purchased water from the TID during wetter years when surplus water is available, including during 1996. In addition, the City and TID have an existing agreement related to TID's use of a City-owned portion of Kaweah Ditch Pipeline and the City's use of TID canals for storm drain purposes. The agreement is attached as Appendix K. The agreement also provides for the joint development of projects to which the City and TID may contribute resources for joint benefit including but not limited to development of groundwater recharge facilities, acquisition of local water rights for imported supplies to provide mutual benefits, potential delivery of treated wastewater in the TID water delivery system and development of a program for surface water supplies to be delivered by TID to the City for municipal use. However, there are no short- or long-term plans to create transfer or exchange agreements with TID at this time.

Future Water Projects

CWC 10631

(g) ...The urban water supplier shall include a detailed description of expected future projects and programs... that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

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
N/A	*No*		None	2015	Average Year	*0*
NOTES:						

As previously noted, the City intends to meet its projected future water demands through the continued use of groundwater alone. As such, no specific future water supply projects are planned at this time (Table 6-7). The City will continue to periodically drill new supply wells in the future. Should the need arise, the City may consider pursuing an alternate source of supply to meet the growing demands of the community (e.g., surface water supply, urban recycled water use, etc.).

However, under the City's Hydrological Enterprise Program efforts, the City does plan to explore projects to exploit its retention and detention basins for greater recharge opportunities. These projects have not yet been pursued even conceptually due to a lack of available resources. However, as part of an upcoming rate study related to Hydrological Enterprise Programs, the City plans to explore the possibility of securing funding for such projects through rate increases.

Summary of Existing and Planned Sources of Water

CWC 10631

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

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

The City's current sole source of supply is groundwater, which is extracted from underground aquifers via 23 active groundwater wells (Table 6-8).

The City's water supplies are entirely obtained from the Kaweah Groundwater Sub basin. The City's groundwater has historically been capable of reliably meeting the City's water demands.

The projected amount of groundwater anticipated to be pumped through year 2040 is included in Table 6-9. As shown in Table 6-9, the City anticipates it will supply all of its water demands from the Kaweah Groundwater Sub basin through the year 2040.

Table 6-8 Retail: Water Supplies — Actual

Water Supply *Drop down list* *May use each category multiple times.* *These are the only water supply categories that will be recognized by the WUEdata online submittal tool*	Additional Detail on Water Supply	2015		
		Actual Volume	Water Quality *Drop Down List*	To Rigl Safe *(opti*
Groundwater		5,001.7	Drinking Water	(
Surface water		0	Raw Water	(
Recycled Water		4,053.70	Recycled Water	(
Total		9,055.4		(
NOTES:				

Table 6-9 Retail: Water Supplies — Projected											
Water Supply *Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool*	Additional Detail on Water Supply	Projected Water Supply *Report To the Extent Practicable*									
		2020		2025		2030		2035		2040 (o	
		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	
Groundwater		6,241.4	6,241.4	7,130.8	7,130.8	8,146.8	8,146.8	9,307.6	9,307.6	10,284.9	
Surface water			0		0	0	0	0	0	0	
Recycled Water		4,864.4	0	5,837.3	0	7,004.8	0	8,405.7	0	10,086.9	
	Total	11,105.8	6,241.4	12,968.1	7,130.8	15,151.6	8,146.8	17,713.3	9,307.6	20,371.8	
NOTES:											

Climate Change Impacts to Supply

The City has not documented actual climate change impacts. There is evidence being gathered by state, federal, and private institutions regarding such impacts, but the City is not actively engaged in such research. This analysis is presently optional for water suppliers and the City has elected not to comment extensively on these impacts.

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Chapter 7 – Water Supply Reliability Assessment

The Urban Water Management Planning Act (UWMPA) requires that the Urban Water Management Plan (UWMP) address the reliability of the agency's water supplies. This includes a description of supplies that are vulnerable to seasonal or climatic variations.

Constraints on Water Sources

CWC 10631

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

CWC 10634

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

There are a variety of factors that can impact water supply reliability. A brief discussion on each of these factors is provided below.

A fundamental factor that affects water supply reliability is the hydraulic capacity of supply and distribution system facilities (e.g., groundwater wells, treatment facilities, transmission mains). As the City continues to grow, it will construct the additional supply and distribution system facilities necessary to accommodate the increased water demands associated with this growth. For this reason, the physical capacity of the City's supply facilities is assumed to not be a limiting factor affecting the reliability of the City's supply in the future. In 2009, the City adopted a Water System Master Plan, which details plans for water and wastewater facilities expansion and capital improvement projects through 2030.

In December 2015 the City's Board of Public Utilities adopted a water connection policy accompanied by an estimation spreadsheet tool to consider City system capacity over a 36 month forward looking period. This is to match requests for connections (which are subject to Board approval) with available system capacity that presently exists and is planned compared with existing demands and likely effects of previous connection approvals. This tool has revealed that the City requires substantial additional capital investment to continue to assure new development connections to its system. This capacity does not relate to the availability of groundwater, but to the ability of the City's delivery system to transmit the demanded water at satisfactory and compliant water pressures at all times during the calendar year, and to meet fire suppression capacity needs. The City is undertaking a rate study to develop funding for adding the additional capacity.

Legal Factors

Legal factors, such as pumping limitations in adjudicated groundwater basins and surface water contracts, are capable of affecting the reliability of a water distribution system. As noted in Chapter 6, however, the Kaweah Sub basin (the City's sole source of supply) is not an

adjudicated groundwater basin. Therefore, adjudication-related legal limitations are unlikely to affect the amount of groundwater that the City can extract from this sub basin.
The Sustainable Groundwater Management Act, signed by the Governor in September 2014 provides for regulation of critically over-drafted groundwater basins by Groundwater Sustainability Agencies (GSA's) or by the State if a local GSA is not established. The City is participating in the Mid-Kaweah GSA (a JPA) with the City of Visalia and the Tulare Irrigation District. During the early implementation of this Act the challenges of forming either one single GSA or a coordinated effort of several GSAs that will provide a plan for the entire Kaweah Sub basin have been evident. It is unclear what, if any, effect the regulations under this Act will eventually effect the City's water supply. Such an impact is very likely to be a "regulatory shortage" more than a "water molecule shortage," but the effects would be the same.

Similarly, in response to the current multi-year drought the Governor by Executive Order caused California water suppliers to reduce water consumption by 25% (this translated into a 32% reduction for the City of Tulare due to the tiered process used to compute required savings). Further regulatory enforcement of this Executive Order may prove to be another example of a regulatory shortage that is legal in nature.

Environmental Factors
There is a heightened awareness of the impact on the California ecosystem from a variety of projects. As such, environmental concerns often arise during the water planning process. These concerns can, in turn, cause a lack of supply due to the enforcement of environmental legislation. The recent legal actions involving the Endangered Species Act in the Delta are an example of the clash between environmental concerns and water supply.

The City currently relies on groundwater to meet its customers' demands. It is not expected that the City's groundwater supply will be limited due to environmental concerns in the future.
Water Quality Factors

The quality of water obtained from a surface water or groundwater source can be a limiting factor on the amount of water that can be obtained from that source. Water quality considerations specific to Tulare are summarized in detail in Chapter 8. As noted in this section, the City's current groundwater supply is capable of reliably meeting City demands. The City does have concerns with regards to certain of its wells showing elevated arsenic and nitrate concentrations. Additionally, certain City wells have shown evidence of contamination 1,2,3-Tricholoropropane (TCP). The City is monitoring the naturally occurring contaminants for potential treatment needs and has initiated a capital project for remediation of the TCP. Given the mitigation efforts the City is taking, at present the City does not foresee a quality related constraint on water supply. In the future, the City will continue to take the steps necessary to comply with all existing and future groundwater quality regulations and to continue to provide reliable water service to its residents.

Climatic Factors
Climatic factors affecting the reliability of a given water supply system generally are a function of seasonal precipitation and runoff characteristics. Systems that rely primarily on surface water

are particularly vulnerable to seasonal runoff. The City relies on groundwater to meet system demands. Therefore, the City is not vulnerable to supply reductions due to decreased runoff. Not all dry years lead to water supply shortages and groundwater overdraft. In an average or wet year, the water supply sources exceed the water needs. During extended drought periods, groundwater levels generally decline and will require more aggressive demand management practices. Overall, however, the reliability and vulnerability of the City's groundwater supply to seasonal or climatic shortages remains constant. Therefore, the annual quantity of groundwater available to the City is not expected to vary significantly in relation to wet or dry years. The City's projected supply and demands associated with drought periods are discussed in greater detail below, in the narratives accompanying Tables 7-1 through 7-4.

Groundwater pumping in the Tulare Lake Hydrologic Region continues to increase in response to growing urban and agricultural demands. Long-term groundwater overdraft can result in land subsidence, which also results in a loss of storage space. This has caused some damage to canals, utilities, pipelines, and roads in the region. However, some agencies within the Tulare Lake Hydrologic Region have adopted groundwater replenishment programs to ensure groundwater will continue to be a viable water supply. Implementation of the Sustainable Groundwater Management Act strengthens the City's and the region's ability to monitor and manage groundwater levels. For these reasons, climatic concerns are not expected to significantly impact the City's current or future supply reliability. Any such impacts are expected to be capable of being addressed by the Groundwater Sustainability Agency that administers the Groundwater Management Plan in the future.

Reliability by Type of Year

CWC 10631

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

(A) an average water year,

(B) a single dry water year,

(C) multiple dry water years.

This section considers the City's water supply reliability during three climate-related water scenarios: normal water year, single dry water year, and multiple dry water years. These scenarios are defined as follows:

Normal Year

The normal year is a year in the historical sequence that most closely represents median runoff levels and patterns. The supply quantities for this condition are derived from historical average yields.

Single Dry Year

This is defined as the year with the minimum useable supply. The supply quantities for this condition are derived from the minimum historical annual yield.

Multiple Dry Years
This is defined as the three consecutive years with the minimum useable supply. Water systems are more vulnerable to these droughts of long duration, because they deplete water storage reserves in local and state reservoirs and in groundwater basins. The supply quantities for this condition are derived from the minimum of historical three-year running average yields.
The City's water supply consists solely of groundwater. During multiple dry years the City is very likely to rely on the more stringent water conservation measures described in Chapter 8 of this 2015 UWMP.

Table 7-1 Retail: Bases 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	% of avg supply
Average Year	1997	4,234.4	100%
Single-Dry Year	1989	3,052.9	72.1%
Multiple-Dry Years 1st Year	1988	3,253.0	76.8%
Multiple-Dry Years 2nd Year	1989	3,052.9	72.1%
Multiple-Dry Years 3rd Year	1990	3,326.0	78.5%
NOTES:			

Basis of Water Data
Historical rainfall data available for Visalia from the California Department of Water Resources' (DWR) California Data Exchange Center (CDEC) were examined to establish a basis of water year for normal, single dry, and multiple dry years. As shown in Table 7-1, for the purposes of this report, the year 1997 is classified as a "normal" year, the year 1989 is classified as a "single dry" year, and the years 1988 to 1990 are classified as "multiple dry" years.
Agencies with Multiple Sources of Water

The City has a single source of water for delivery (groundwater) and does not foresee that changing during the planning period for this UWMP.

Supply and Demand Assessment

CWC 10635

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

The City's water supplies are drawn 100% from groundwater supplies. There are currently no concerns regarding a diminishment of the groundwater supplies such that the City is not able to provide water to its service area. In all estimates and projections, supply is equal to demand given that the City does not have an accurate account of the quantity of groundwater available in the aquifers below ground and the City shares these aquifers with other municipal service areas. Current and ongoing management of these supplies are achieved through both voluntary and state-mandated consumption conservation efforts, and SGMA.

Table 7-2 Retail: Normal Year Supply and Demand Comparison

	2020	2025	2030	2035	2040 *(Opt)*
Supply totals *(autofill fm Table 6-9)*	11,106	12,968	15,152	17,713	20,372
Demand totals *(autofill fm Table 4-3)*	11,106	12,968	15,152	17,713	20,372
Difference	0	0	0	0	0
NOTES:					

Table 7-3 Retail: Single Dry Year Supply and Demand Comparison

	2020	2025	2030	2035	2040 (Opt)
Supply totals	8,662	10,512	12,748	15,546	
Demand totals	8,662	10,512	12,748	15,546	
Difference	0	0	0	0	0
NOTES:					

Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2020	2025	2030	2035	2040 (Opt)
First year	Supply totals	8,662	10,512	12,748	15,546	
	Demand totals	8,662	10,512	12,748	15,546	
	Difference	0	0	0	0	0
Second year	Supply totals	8,662	10,512	12,748	15,546	
	Demand totals	8,662	10,512	12,748	15,546	
	Difference	0	0	0	0	0
Third year	Supply totals	8,662	10,512	12,748	15,546	
	Demand totals	8,662	10,512	12,748	15,546	
	Difference	0	0	0	0	0
NOTES:						

Regional Supply Reliability

CWC 10620

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

The Sustainable Groundwater Management Act (SGMA) provides the City with a legal framework to participate in decisions affecting the Kaweah sub basin, which is the sole source of the City's water deliveries. The effects of the Act, and the impacts on the regional supply reliability is discussed in Chapter 8. The City is also working closely with the Tulare Irrigation District on projects to import surplus water in wet years off the Friant-Kern Canal system. The City also participated with other stakeholders in preparing and having submitted to the State the Integrated Regional Water Management Plan. This IRWMP prepared under the direction of the Kaweah Delta Water Conservation District documents and details the approach of its participants within the watershed as to methods for coordinating and integrating management of available water resources. The entire IRWMP, as amended, may be located on the KDWCD website at: http://www.kdwcd.com/kdwcd_adopted_irwmp_with_corrections_2-23-15_.pdf

Chapter 8 – Water Shortage Contingency Planning

The UWMPA requires that the UWMP include an urban water shortage contingency analysis that addresses specified issues.

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

Water shortage contingency planning is a strategic planning process to prepare and respond to water shortages. Good planning and preparation can help agencies maintain reliable supplies and reduce the impacts of supply interruptions. This chapter provides guidance for describing the City of Tulare's water shortage contingency planning. Included is guidance for reporting the staged response to a water shortage, such as a drought, that occurs over a period of time, and how to deal with sudden catastrophic supply interruptions.

The context in which the 2015 Urban Water Management Plan (the, "Plan") is written differs radically from past circumstances that greatly impact the water shortage contingency analysis and planning. Some of the changed situational circumstances are descried below.

Four-year drought of historic proportions.
The City of Tulare, along with the entire state of California and the western United States, has endured a drought of historic proportions. Rainfall and water table information as published by the Tulare Irrigation District show the significant impacts of four years of drought. See Figure 8-1 and Appendices B-4 to review the Fall 2015 TID Depth to Groundwater and Rain Fall Total Map and chart, respectively.

Because one hundred percent of the City of Tulare's water supply comes from groundwater the City's risk management process must take the condition of the underground basin into account. Drought is just one of the "hazards" that are considered as part of the City's risk mitigation program. Among hazards that put the water supply at risk are the following:

- Insufficient groundwater quantities resulting in an actual shortage of water available for delivery;
- Regulatory mandates that restrict pumping of sufficient water to meet demand (regulatory shortages);
- Groundwater pollution that renders water incapable of being delivered without treatment;
- Inadequate system capacity to delivery enough water at suitable pressures;
- Catastrophic events, such as earthquakes or other events that disrupt the water transmission system, can disrupt the water system's delivery capacity.
- Surface water delivery failures to local agricultural enterprises within the County of Tulare that cause excessive pumping immediately around the City to the extent that natural geologic water flows are disrupted.

Droughts are a normal part of the long term hydrological cycle in California. The nature of stored water underground is a natural mitigation to the water supply disruptions caused by drought. Therefore, normal drought cycles are not risks to the water supply per se, but prolonged droughts contribute to circumstances that create water supply risks. Equally dangerous to the water supply is poor supply resource planning such as the failure to build statewide water transmission systems and water storage facilities (such as dams), poor water usage and conservation policies and laws, and population growth unaccompanied by corresponding water supply planning.

State Conservation Mandates and Regulations

For example, although by all accounts there remains adequate actual water supply to City of Tulare wells, the City's water system delivery capacity has been eroded in recent years by unexpected well failures (some probably related to the stresses of the drought). Groundwater pollution in the nature of 1,2,3-Tricholoropropane (TCP) in portions of the City pose a threat to being able to deliver water from portions of the aquifer. The state-wide effects of the Governor's Executive Order and related implementing regulations have effectively created a regulatory shortage without regard to the actual amounts of water immediately underlying the City of Tulare. The City's contingency planning must take all such situations into account.

Based on City well depth and water coverage measures it appears that adequate groundwater molecules remain available for short and intermediate term water demands. However, there is clearly a need to reverse deteriorating groundwater levels over the longer term to avoid real water shortages. The City anticipates that application of the Sustainable Groundwater Management Act will accomplish this long term objective. At present, State mandates occasioned by the historic state-wide drought have imposed string water conservation requirements on the City (as well as the rest of the State) thereby creating an immediate "regulatory local water shortage" when compared to immediate demands.

The City's Board of Public Utilities and City Council recognize that strict water conservation is the new way of life within the City. Although not a response to an "urgent local emergency," as described in State literature, there will need to be gradual migration to a philosophy of urban water use within the City that perpetuates minimal water usage. This will not only influence per capita conservation, but will also constrain business processes that use significant amounts of water. The next five years will see the City work on per capita usage standards and techniques to more accurately measure results that will likely be stricter than those already proscribed by the State.

Sustainable Groundwater Management Act (SGMA)

Groundwater is the City's supply lifeline. Even though the City's pumping is relatively modest compared to the surrounding pumping there has never been a mechanism to balance all the interests of pumpers from the Mid-Kaweah sub basin (the sub basin that underlies the City). The City shares in the interest of promoting and preserving the agricultural enterprises around it because that is the business foundation on which the City's economic circumstances rest. One new tool for mitigating the risks to the sub basin is the Sustainable Groundwater Management Act (SGMA) adopted by the State in 2013.

SGMA provides for the creation of Groundwater Sustainability Agencies (GSA's) that either individually or through coordinated efforts must achieve groundwater sustainability for each of several sub basins in the state by 2040. This new law provides a forum in which the City can participate to work to protect its single source of supply. The City has joined the City of Visalia and the Tulare Irrigation District to form the Mid-Kaweah GSA Joint Powers Authority (MK-JPA). See Appendix G. This JPA covers about 1/3 of the Kaweah sub basin. Together, with other GSA's forming over the Kaweah sub basin a coordinated plan to assure that this source of supply remains available and viable is expected to be assembled. This is a tremendous structure within which to mitigate risks to the groundwater basin that stores and supplies all of the City's potable water. SGMA uses a multi-facet approach to groundwater preservation addressing everything from concepts of "safe yield" (outflows equal to inflows) to subsidence to groundwater quality (which includes pollution control).

The "Demand Management Measures" chapter in this Plan describes in more detail the ongoing water conservation efforts.

Stages of Action

CWC 10632

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

The impacts of a warm summer climate, heavy surrounding water demands by the agricultural industry that is the economic lifeblood of the region, and the relatively frequent cycle of droughts in the State of California (the preparatory period for this report occurs during the occurrence of a four-year drought of somewhat historical dimensions), requires the City and its customers to assume that tightened water usage is a permanent operating norm rather the exception. Therefore, the base from which later stages would tighten is already a very conservative water usage way of life.

The City has adopted City of Tulare Municipal Code Section 1, Title 7, Chapter 7.32, and (Outdoor Water Use – Water Conservation Stages) by ordinance. These Municipal Code provisions are included in Appendix H to this Plan chapter, and are incorporated here by reference to provide details of each of the water conservation stages. This comprehensive water conservation regulation provides for water conservation in five progressively more restrictive stages. Each successive stage builds upon the previous stage's restrictions with additional restrictions and additional targets for conservation. The ordinance defines 2013 as the base year for measuring conservation efforts. This base year was selected to be consistent with the regulations pertinent to the Governor's 2015 Executive Order.

Base Water Conservation Stage

At all times the ordinance prohibits water waste which is specifically defined in section 7.32.050 (A) – (d). These specifics range from excess runoff to irrigation within 48 hours of a rain event. Although section 7.32.060(A) defines "Voluntary Compliance, Water Alert Conditions, this section has not been implemented alone for many years. It can best be interpreted as forming the

floor below which the City would never go even if water supplies become exceedingly abundant. Among its restrictions are restricting hours of irrigation, encouraging minimal methods of watering, allowing vehicle washing only with shut-off nozzles, prohibiting operation of ornamental fountains unless they use a recycling system, prohibiting hardscape washing without shut-off nozzles, and requesting restaurants to only serve water when specifically requested.

Stage Two, Mandatory Compliance, Water Warning Conditions
Section 7.32.050(B) defines Stage Two, "Mandatory Compliance, Water Warning Conditions," by limiting watering on an odd/even address basis to three days per week, prohibiting hardscape washing, and adding penalty provisions for violation. These restrictions are cumulative on top of Stage One from the section above. Together, Stages One and Two are seen as baseline water conservation stages.

The City's Board of Public Utilities is responsible for declaring the Water Conservation Stage in effect at any given time. The method of implementing various stages is to be based on public welfare and safety specific facts; or to comply with specific mandates from the State of California. (TMC §7.32.030). As a practical matter, the facts and circumstances surrounding the types of risk to the water delivery capabilities (as described above in the Chapter 7 "Introduction") will be the basis for moving through the various progressive stages of water conservation. Factual findings justifying a finding there is a risk to water supply might include the following: significant production losses due to supply system failures, inability to pump due to significant increases in pollution levels, State emergency declarations, depletion of groundwater to the extent that pumping efficiencies are affected, substantial subsidence putting the groundwater basin at risk, and catastrophic events impacting the water supply.

Stage Three, Mandatory Compliance, Water Emergency Condition (35% reduction goal)
Stage three comes into play under Water Emergency Conditions such as when the Governor declares a state-wide water emergency. The water conservation target for stage three is 35% as compared to Stage Two. Watering hours are significantly reduced (See Ordinance in Appendix H), and additional use prohibitions are applied.

Stage Four, Mandatory Compliance, Drought Emergency (35% - 50% reduction)
Stage four comes into play under Water Emergency Conditions such as when the Governor declares a state-wide water emergency and imposes a reduction of greater than 35% on the City specifically. The water conservation target for stage four is 35% - 50% as compared to Stage Two. Watering hours are further reduced and additional conservation prohibitions come into effect.

Stage Five, Mandatory Compliance, Water Extreme Emergency Condition (50% and more reduction).
Stage Five is invoked in response to orders from the State or the direst of circumstances with regard to water supply. The water conservation target for stage five 50% and more as compared to Stage Two. Irrigation watering hours are eliminated though residents may hand water trees and large shrubs one day per week. All water use is severely restricted Stage Five.

Table 8-1 Retail : Stages of WSCP		
Stage	Complete One or Both	
	Percent Supply Reduction[1]	Water Supply Condition
I	0%	Voluntary Compliance, Water Alert Conditions
II	0%	Mandatory Compliance, Water Warning Conditions
III	35%	Mandatory Compliance, Water Emergency Condition
IV	35% -50%	Mandatory Compliance, Drought Emergency Condition
V	50% +	Mandatory Compliance, Extreme Water Emergency Condition
[1] One stage in the WSCP must address a water shortage of 50%.		
NOTES:		

Prohibitions on End Uses

CWC 10632

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

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

Stage Effect Summaries Introduction.
Tables 8-2 and 8-3 summarize, by water supply conservation program, consumption methods and prohibitions by water conservation stage. This section describes in more detail these consumption reduction methods and prohibitions.

Common Restrictions and Prohibition Categories
Table 8-2 provides a summary of common categories of restrictions and prohibitions that may be placed on end users by a water agency, and includes a description of the restrictions and prohibitions being used by the City of Tulare.

The categories of restrictions and prohibitions in the table below come from State of California publications guiding the preparation of Urban Water Management Plans throughout the state. Examples of specific actions that could fall into each category are discussed next. Where deemed helpful, comments regarding the City's specific implementations are also inserted into the suggested language from the State's publication. The stages indicated above are cumulative so any restriction or prohibition that begins in a lower stage continues and is added to in a higher stage.

Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users *Drop down list These are the only categories that will be accepted by the WUEdata online submittal tool*	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement? *Drop Down List*
I	Landscape - Restrict or prohibit runoff from landscape irrigation		Yes
II	Landscape - Limit landscape irrigation to specific times		Yes
	Landscape - Limit landscape irrigation to specific days		Yes
	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner		Yes
III	Landscape - Other landscape restriction or prohibition	Restricts number of irrigation days	Yes
	Landscape - Restrict or prohibit runoff from landscape irrigation		Yes
	Other - Require automatic shut of hoses		Yes
	Other - Prohibit use of potable water for washing hard surfaces		Yes
IV	Landscape - Limit landscape irrigation to specific times	Irrigation restricted further from Stage 3	Yes
	Landscape - Limit landscape irrigation to specific days		Yes
	CII - Lodging establishment must offer opt out of linen service		No
	Water Features - Restrict water use for decorative water features, such as fountains		Yes
	CII - Restaurants may only serve water upon request		Yes
V	Landscape - Prohibit all landscape irrigation		Yes
NOTES:			

Landscape Irrigation
Restrict or prohibit runoff from landscape irrigation – Irrigation runoff is to be prevented. Excessive irrigation runoff is prohibited. Irrigation runoff is prohibited.

Limit landscape irrigation to specific times – Landscape irrigation is limited to between the hours of 9:00pm and 6:00am. Landscape irrigation is limited to eight minutes per day duration.

Limit landscape irrigation to specific days – For example, even numbered addresses are allowed to water only on Tuesday, Thursday, and Saturday. Landscape irrigation is allowed only two days per week. Landscape irrigation is only allowed one day per week.

Prohibit certain types of landscape irrigation – The use of sprinkler irrigation is prohibited. Irrigation of turf is prohibited, except with recycled water. Only irrigation of trees and shrubs is allowed.

Prohibit all landscape irrigation – All landscape irrigation using potable water is prohibited or all landscape irrigation is unconditionally prohibited.

Other landscape restriction or prohibition – Any other landscape restriction or prohibition utilized by the agency.

Commercial, Industrial, Institutional (CII)
Lodging establishment must offer opt out of linen service – Lodging establishments are required to place notices in each room that informs the guest that they may opt out of linen service.

Restaurants may only serve water upon request – Restaurants may not serve water to customers unless requested

Commercial kitchens required are to use pre-rinse spray valves – Any commercial kitchen is required to use a pre-rinse spray valve as part of their dish washing operation.
Other CII restriction or prohibition – Any other CII restriction or prohibition selected by the Agency

/////

Consumption Reduction Methods

CWC 10632

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

Common Consumption Reduction Categories

Table 8-3 provides a summary of common categories of consumption reduction methods that can be used by a water agency, and includes a description of the methods being used by the City.

The consumption reduction method categories in the following table come from State of California publications guiding the preparation of Urban Water Management Plans throughout the state.

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

Stage	Consumption Reduction Methods by Water Supplier *Drop down list* *These are the only categories that will be accepted by the WUEdata online submittal tool*	Additional Explanation or Reference *(optional)*
I	Expand Public Information Campaign	
II	Increase Water Waste Patrols	
III	Expand Public Information Campaign	
III	Increase Water Waste Patrols	
III	Reduce System Water Loss	
III	Implement or Modify Drought Rate Structure or Surcharge	
IV	Expand Public Information Campaign	
IV	Reduce System Water Loss	
IV	Increase Water Waste Patrols	
V	Decrease Line Flushing	
V	Implement or Modify Drought Rate Structure or Surcharge	
V	Expand Public Information Campaign	
NOTES:		

Examples of specific actions that could fall into each category are discussed next. Where deemed helpful, comments regarding the City's specific implementations are also inserted into the suggested language from the State's publication.

Expand Public Information Campaign – Begin or enlarge media campaign. Create bill insert with conservation information. Write articles for local newspaper. Conduct water efficiency workshops for different customer sectors. The City uses drought surcharge funding for these programs and has implemented them.

Improve Customer Billing – Increase billing frequency. Change format to report consumption in gallons per capita per day. Add information to the bill comparing the customer's use to similar customers. The City has already implemented these measures in full.

Increase Frequency of Meter Reading – Change from bi-monthly to monthly meter reading. Employ AMI to that meters are read in real time. The City currently reads and bills monthly. The City is exploring technological upgrades that can be incorporated into its meter replacement programs to achieve the "smart meter" type of applications that the electric and gas companies are using.

Offer Water Use Surveys – Actively reach out to high water users to offer water use surveys. Expand water use survey program to include new sectors. The City coordinates with the University of California Master Gardner program to identify free water-wise/efficient gardening and landscaping information. The City also actively directs customers requesting turf removal rebates to the program operated and funded by the State of California.

Provide Rebates or Giveaways of Plumbing Fixtures and Devices – Implement new (toilet, clothes washer, etc....) rebate programs. Implement new (shower head, aerator, etc....) giveaway programs. Expand rebate programs by including new types of rebates. Offer a higher dollar value for each rebate. Expand funding for existing rebate or giveaway programs. Funding for programs of this type has not been available. The City will investigate funding sources and implementation of such programs over its next five year water management planning cycle. In the meantime, the City distributes water efficient showerheads free of charge upon request and directs its customers requesting low-flow toilet rebates to the program operated and funded by the State of California.

Provide Rebates for Landscape Irrigation Efficiency – Implement a new landscape efficiency rebate program that provides rebates for landscape conversion, irrigation controllers, sprinkler heads, etc.... Expand an existing rebate program that provides rebates for landscape conversion, irrigation controllers, sprinkler heads, etc.... Funding for programs of this type has not been available. The City will investigate funding sources and implementation of such programs over its next five year water management planning cycle.

Decrease Line Flushing – Decrease the length of time for each line flushing. Decrease the frequency of line flushing. Flush lines with non-potable water. The primary line flushing is in connection with fire hydrants and the City seeks ways to redirect any water from these required health and safety maintenance exercises to beneficial uses when possible. The City conducts

such flushing at a minimum required to maintain functionality in terms of the water system's fire suppression capabilities.

Reduce System Water Loss – Implement a water audit program and expand the leak repair program to control system losses. New state laws will require the City to begin a significant assessment program and to reduce leakage losses. For over one year the City has been replacing meters and establishing a tighter accounting of its water deliveries (versus water pumped through its wells) to measure and quantify leaks. The City's rate study and proposed new water rates will include funding for water auditing and a new program to repair and replace up to five miles of obsolete pipeline per year in addition to its standard leak control program. As part of its replacement program the City intends to use new technologies to help it pinpoint leaks on an ongoing basis.

A water audit is a process of accounting for water use throughout a water system in order to quantify the unaccounted-for water. Unaccounted-for water is the difference between metered production and metered consumption on a system-wide basis. A leak detection program typically consists of both visual inspection as well as audible inspection. Visual inspection includes the inspection of distribution system appurtenances (e.g., fire hydrants, valves, meters, etc.) to identify obvious signs of leakage. To perform audible leak detection, specialized electronic listening equipment is used to detect the sounds associated with distribution system leakage. This process allows the agency to pinpoint the location of suspected leaks.

Increase Water Waste Patrols – Implement a Water Waste Patrol program. Increase staffing for Water Waste Patrol. Increase authority of Water Waste Patrol. The City has greatly expanded its water waste patrols and increased this aspect of regulatory control using funding from its drought surcharge.

Moratorium or Net Zero Demand Increase on New Connections – Agency does not approve new water service connections. Agency will only approve a new connection if the applicant can demonstrate a net zero demand increase for the new connection. The City has implemented a specific water connection policy that analyzes its capacity to connect new customers. That policy is discussed in more detail in Chapter 7, "Constraints on Water Resources".

Implement or Modify Drought Rate Structure or Surcharge –Implement a drought rate structure or modify a drought rate structure with a drought surcharge on all customers. The City's implementation of its drought surcharge is discussed below in more detail in Section "Drought Surcharges".

Other – Implement any other action that the agency may take to reduce water consumption. For example, the City of Tulare has implemented an ongoing discussion with its largest agricultural customers about water conservation methods they might use and is researching new technology options.

Additionally, the City has conducted water conservation forums both on its own and in cooperation with the University of California "Master Gardeners" program. These have been very well attended with over 110 people attending one such event.

Drought Surcharges

"Drought surcharges" are referenced in several places in this chapter. A rate structure or surcharge that is implemented in times of water shortage is different than a conservation rate structure, which is in place at all times. Agencies may choose to embed a drought rate structure within their conservation rate structure. See Appendix I for a copy of the City of Tulare's drought surcharge rate ordinance provisions and supplementary information regarding its structure to recover costs directly caused by the drought that were not built into the base City rates. Conservation rate structures are discussed as part of demand management in Chapter 8.

It is an important water conservation strategy to set costs that recover the full water program costs. These costs include recharge and actions to sustain the groundwater basin that stores one hundred percent of the City's water supply. These costs also pertain to surface water programs that control recharge throughout the City by way of its water retention basins (the City of Tulare has a total of 37 retention basins). These basins collect all excess water (both storm water flows and other surface water that runs into City streets and other impervious surfaces from City water service deliveries) for recharge and pollution remediation. When these costs are ignored the price of water does not reflect its true costs. Traditional economic theories teach that any product that is underpriced will be subject to higher consumption demand than would be the case if fairly priced. This same principle seems to also apply to water.

The Law

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

Health and Safety Code Section 115921.
(a) "Swimming pool" or "pool" means any structure intended for swimming or recreational bathing that contains water over 18 inches deep. "Swimming pool" includes in-ground and aboveground structures and includes, but is not limited to, hot tubs, spas, portable spas, and non-portable wading pools.

Water Features and Swimming Pools

Restrict water use for decorative water features, such as fountains – Decorative water features may only be operated if they use recirculating water. Decorative water features shall not be allowed to operate.

Require covers for pools and spas – Every swimming pool and spa is required to cover the surface of the pool or spa with a cover that reduces evaporation during hours that the pool or spa is not in use. The City has not yet implemented such a restriction because of the significant number of swimming pools and the legal and administrative difficulties involved with enforcing

such requirements. The City has so far focused on actions to maximize water savings at the lowest administrative and legal costs.

Restrict filling of residential swimming pools – Swimming pools may not be filled unless authorized by a permit. Only new swimming pools are allowed to be filled. Water may not be used to fill a pool or to replace water lost to evaporation and use.

Other water feature or swimming pool restriction – Any other restriction or prohibition selected by the agency for reducing water use in water features or swimming pools.

The City of Tulare's ordinance treats swimming pools and spas separately from all other water features in compliance with the state law above. See Appendix H.

Other

Customers must repair leaks, breaks, and malfunctions in a timely manner – Broken or malfunctioning sprinkler heads must be repaired within 48 hours after the customer receives a notification from the water agency. All leaks or breaks must be repaired by the customer within 48 hours of receiving a notification from the water agency.

Require automatic shut of hoses – Hoses may only be operated out of doors if they are equipped with an automatic shut off nozzle.
Prohibit use of potable water for construction and dust control – Potable water may not be used for construction or dust control.

Prohibit use of potable water for washing hard surfaces – Potable water may not be used to wash hard surfaces, such as driveways or sidewalks, except in cases of health and safety.

Prohibit vehicle washing except at facilities using recycled or recirculating water – Vehicles may not be washed except at a facility that uses recycled or recirculating water.

Other – Any other restriction or prohibition selected by the water agency to reduce water consumption. Following the State's emergency regulations, the City has removed all irrigable turf from its street medians and has implemented a permanent policy of not installing turf into City medians in the future.

Penalties, Charges, other Enforcement of Prohibitions

CWC 10632

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

Prohibition Enforcement Procedures

The City employs staff members dedicated to the enforcement of the City's water conservation ordinances. These employees typically work 960 hours per year patrolling City streets to observe violations of the City's water policies. Additionally, all City staff (including police, fire, parks, public works, solid waste and other employees) are charged with reporting water waste or leaks they observe.

The City maintains a water waste hotline [(559) 684-4280] that receives calls and voicemails twenty four hours per day. The water enforcement employees' follow-up on the water calls received.

When a violation of the water conservation ordinance is noted the following enforcement cycle is used:

- First offense – written warning
- Second violation – fine of $35
- Third violation – fine of $70
- Fourth violation -- $150
- Fifth and subsequent violations -- $300

Those cited may appeal to the Board of Public Utilities if they believe the citation is unfair though the Public Works Director has the administrative power to correct basic errors or citations under circumstances where a citation ticket should not have been issued in the first place. During fiscal year 2015, a total of 3,623 citations were issued in the form of warnings, second offenses, third offenses, and fourth and subsequent offense.

Although the rate structure is not used as an enforcement method, the City has employed tiered water rates. The tiered water rates reflect the greater fixed capacity costs incurred by the City to be able to provide peak capacity to high volume water consumers. Since almost all of the peak usage occurs during warm months when irrigation occurs among residential customers, the tiered rates are only applied to residential water consumers. The City's strategy is to fully cost delivered water to those benefitting (and thereby causing the costs to be incurred). Economic theory suggests that this full, and fair, costing approach will cause consumers to minimize their usage.

Conservation Methods Estimated Water Savings

The City has not historically been able to track actual water conservation with regard to particular restrictions or prohibitions except on a macro-level. This inability persists except with regard to total usage. Even this metric is skewed, however, because residency patterns, weather patterns, and combinations of multiple conservation efforts by residents prevent isolation of any particular causal factors. In this regard, with the implementation of Stage Two and the increased publicity regarding the need for water conservation, the City's customers were able to achieve the following conservation compared to their 2013 water consumption (excluding exempted commercial agricultural producers): May (32.53% y-o-y), June (33.66% y-o-y) and August (32.47%. y-o-y).

Enforcement related Conservation Savings

Please see above section "Conservation Methods Estimated Water Savings".

Determining Water Shortage Reductions

CWC 10632

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

The City has adopted 2013, using Stage Two of its Water Conservation Ordinance, as the baseline for determining reductions for its water stage results. This is the year (and where the City's stages were set during that year) that is being used in the State Water Emergency regulations. This base year is not the same as the base year for achieving statewide conservation goals of 20% reduced usage by 2020. This separate baseline is described in Chapter 5 of this document.

Virtually all City service accounts are metered and the City has recently replaced a number of older industrial meters. The City has a program whereby it attempts to reconcile the water pumped at the wellheads with the water delivered. These techniques allow for relatively accurate assessment of the reductions in water usage (both pumped and delivered) on a system-wide basis. The City intends increase its ability to use its water meter system to measure more localized results down to the household level. This may allow for more precise measurements of the effects of particularized water conservation actions.

For purposes of compliance with State regulations the City exempts commercial agricultural producers using their land to produce agricultural commodities, pursuant to the exemption allowed by the regulations and the definitions of "agricultural commodity production" under State law.

Revenue and Expenditure Impacts

CWC 10632

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

Financial Impacts of Consumption Reductions Generally

Agencies typically experience a decrease in revenue with reduced water sales. Expenditures can also be expected to increase during water shortages as a result of increased outreach to customers about water conservation, possibly as a result of purchasing new water supplies, and possibly as a result of developing and implementing a drought rate. The degree to which revenues decrease or costs increase based upon decreased water consumption (or increased water conservation measures) is sometimes referred to as the "elasticity" of the revenues or expenses. The average percent change in dollars divided by the average percent change in consumption is how "elasticity" is computed.

Fortunately, the risks associated with elasticity can be mitigated in many circumstances by carefully designed rate structures and revenue programs, the use of financial reserves, and other measures. Those topics are the subject of the next section of this chapter.

The City is still gathering information with regard to the revenue elasticity related to the conservation consumption reductions. City staff has estimated that a 32% reduction in water consumption (exempting agricultural producers) will result in an approximately $1.5 - $2.0 million decrease in sales revenues; an elasticity factor of 0.30. If agricultural commodity producers' water consumption were further reduced this revenue loss would be higher.

Rate Structures and Surcharge Mitigation Measures

The City has adopted its base rate structure and an additional drought surcharge. The base rate structure includes fixed charges by meter size (which measures the basic capacity allocations to each account) and a "commodity charge" which essentially captures both the variable costs of providing water deliveries and the surplus capacity required at peak periods to provide water above the average usage. The rate tiers, which are part of the commodity charge, increase the rates to reflect the variability in capacity costs for peak usage.

The adopted rates presently in place are as follows:

Tiered Rate Structure **Figure 8-1**
2015 Urban Water Management Plan
City of Tulare

			Effective	
Commodity Charge		**Tgal**	**1/1/2016**	**1/1/2017**
Single-Family Residential				
	Tier 1	0-9	$0.547	$0.564
	Tier 2	9.01-30	$0.788	$0.813
	Tier 3	30.01+	$1.577	$1.625
Institutional			$0.846	$0.871
Commercial			$0.725	$0.747
Industrial			$0.611	$0.630
Multi-Residential			$0.611	$0.630
Fixed Meter Charge			**1/1/2016**	**1/1/2017**
3/4"			$13.53	$ 13.94
1"			$16.64	$ 17.14
1.5"			$24.41	$ 25.14
2"			$33.72	$ 34.74
3"			$55.47	$ 57.13
4"			$86.53	$ 89.13
6"			$164.19	$ 169.11
8"			$257.38	$ 265.10
10"			$366.10	$ 377.08

The base rate structure is described more particularly in Appendix J which contains a copy of the adopted water rate ordinance.

The drought surcharge is comprised of a fixed component of $1.36 per month per account and a variable component equal to $0.0663 for every 1,000 gallons used. The drought surcharge is to expire when the additional costs associated with the drought, cumulatively, have been recovered and the drought surcharge is no longer appropriate under specific criteria contained in the ordinance creating the drought surcharge.

Use of Financial Reserves

As part of the new rate study there is an intention to boost reserves. The City is formulating a business plan and program strategy that will set reserve goals.

In addition to its normal reserve fund balances, the City Council has annually for several years appropriated money into the "Catastrophic Reserve Fund." This fund is dedicated to emergency preparedness and emergency response, with a particular emphasis on matching Federal Emergency Management Agency (FEMA) grants and loans which are often made available during a disaster. As of December 31, 2015, this fund reserve had a cash balance of $475,000.

Other Financial Impact Mitigation Measures

In fiscal year 2015/16 the City undertook a new analysis and rate study for purposes of updating its water rates. That rate study will take the revenue losses associated with conservation into account to the extent that the water conservation stages are expected to remain unchanged for the foreseeable future (Stage Three). The City is constantly reviewing its drought surcharge to capture those costs. However, because the surcharge can extend beyond the end of the drought it has the capacity to make the City whole over the long term for drought related costs.

Conservation Savings

There are very little reducing impacts on costs associated with water conservation. Conservation is very expensive both in terms of new enforcement, "give-away" programs, and dealing with the additional regulations. The only significant variable cost relates to the electricity used to pump the water. To the extent that conservation reduces deliveries it reduces that variable cost. Also, to the extent that conservation slows or reverses the dropping of the water table, pumping (again, primarily electricity) costs can be reduced modestly.

The greatest potential cost reduction comes into play to the extent that overdraft, and its associated adverse impacts on the underground basins and aquifers, can be reversed. Eventually there must be a cost associated in dealing with this "tragedy of the commons" (an economic term describing over-use of public assets without adequate cost recovery to the point that the public asset is made unusable for all). Conservation may curtail such long term costs.

Resolution or Ordinance

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

Tulare Municipal Code Section 7.32.

The applicable City ordinance is codified at Section 7.32 et seq., of the City Municipal Code. Please see Appendix J.

Catastrophic Supply Interruption

CWC 10632

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

General City Emergency Responses

The City of Tulare has an integrated emergency response protocol. Catastrophic events that are sudden and unexpected are subject to this coordinated emergency response that is led by the City's Fire Department.

Temporary Interruption Responses – E.g., Regional Power Outage

City defines a temporary interruption as one lasting twenty-four (24) hours or less. The City is engaged in a capital program of acquiring mobile generators for enough of its wells (presently estimated to be about twenty five percent of its working wells) to continue pumping during temporary power outages; the most likely potential cause of a temporary interruption.
In other cases of temporary outages (other than power), there is enough pressure in the system to typically continue basic service and fire suppression for six – eight hours. The City's fire department has access to its own pumper trucks (called "water tenders) which can be filled at wells with generators and from public pools. The City would also call upon County-wide facilities (under mutual aid agreements) for fire suppression. Bottled water should be adequately available to residents from stores and other commercial sources. If extremely dire needs for potable water exist during such temporary interruptions, then water heaters and other stored water could be used to meet those emergent needs.

Extended Interruption Responses – E.g., Earthquakes

For outages lasting only a matter of a few days and without significant damage to the water transmission lines, the City should be able to use its temporary generators to maintain adequate flows for fire suppression and basic needs. However, significant breakage damage to the water transmission lines (such as from an earthquake) is more problematic.

Once again, mutual aid agreements might be of some help, but if the catastrophe is regional then other agencies may be unable to respond. During the current drought emergency the County of Tulare has responded to their own residents without potable water by bringing in large water tanks (500 gallons). The City could, in addition to this strategy, use working wells to fill tanks and containers at designated locations for distribution. This effort would be coordinated by the City staff and volunteers under emergency order provisions.

In addition to its normal reserve fund balances, the City Council has annually for several years appropriated money into a "Catastrophic Reserve Fund." This fund is dedicated to emergency preparedness and emergency response, with a particular emphasis on matching Federal Emergency Management Agency (FEMA) grants and loans which are often made available during a disaster. As of December 31, 2015, this fund reserve had a cash balance of $475,000.

Minimum Supply Next Three Years

CWC 10632

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

Table 8-4 Retail: Minimum Supply Next Three Years			
	2016	2017	2018
Available Water Supply	8,127.2	8,261.0	8,394.8
NOTES:			

Implementation Status

Water agencies must provide an estimate of the minimum water supply available during each of the next three water years, 2016, 2017, and 2018, consistent with the multiple-dry year condition reported in Chapter six of this Plan. The City constantly projects its firm supply and gross available supply for a three year period.

Based upon information provided by Tulare Irrigation District and Kaweah Delta Water Conservation District concerning groundwater conditions in the Kaweah sub basin underneath the City, there are 11.6 million acre feet available even with the current dry conditions. See the 'Water Shortage' narrative in Chapter 6 for further detail. The greatest challenge at this junction is not the number of water molecules in the ground, but the regulatory environment that restricts deliveries as part of the drought emergency response statewide. Therefore, the available water supply matches the expected consumption and deliveries projected based on demand. The minimum supply to be made available is subject to further restriction by action of the State of California through regulation.

The above table reflects the minimum expected delivery demands under State ordered mandatory conservation measures. The City has no expectation of their being any shortage of actual water in the underground aquifer over the next three years even under a complete lack of rainfall in the watershed because of the current depth of groundwater levels.

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Chapter 9 – Demand Management Measures

The goal of the Demand Management Measures (DMM) section in a UWMP is to provide a comprehensive description of the water conservation programs that a supplier has implemented, is currently implementing, and plans to implement in order to meet its urban water use reduction targets. This chapter provides the opportunity for water suppliers to communicate their efforts to promote conservation and to reduce the demand on the water supply.

The section of the CWC addressing DMMs was significantly modified in 2014, based on recommendations from the Independent Technical Panel (ITP) to the legislature. The ITP was formed by DWR to provide information and recommendations to DWR and the Legislature on new demand management measures, technologies and approaches to water use efficiency (see http://www.water.ca.gov/wateruseefficiency/sb7/committees/urban/u2/).

In its report to the Legislature, the ITP recommended that the UWMP Act should be amended to simplify, clarify, and update the demand management measure reporting requirements. The ITP recommended, and the legislature enacted, streamlining the retail agency requirements from 14 specific measures to six more general requirements plus an "other" category.

The City does not presently wholesale water so planning provisions related to wholesalers do not apply.

Demand Management Measures for Retail Agencies

CWC 10631

(f) (A) The narrative shall describe the water demand management measure that the supplier plans to implement to achieve its water use targets pursuant to Section 1068.20.

(B) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures:

(i) Water waste prevention ordinances.

(ii) Metering.

(iii) Conservation pricing.

(iv) Public education and outreach.

(v) Programs to assess and manage distribution system real loss.

(vi) Water conservation program coordination and staffing support

(vii) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.

The City has implemented all of the seven DMMs listed above in whole or in part. The remainder of this chapter describes how these have been implemented or how the City is planning to more fully implement these DMMs. Please refer to Chapter 8 in this 205 UWMP

Water Waste Prevention Ordinances

The City's Ordinance is more fully described in Chapter 8 in this 2015 UWMP and is contained in Appendix H.

Table 8-2 provides a summary of common categories of restricts and prohibitions that may be placed on end users by a water agency, and includes a description of the restrictions and prohibitions being used by the City of Tulare. They have been recently amended in spring of 2015 to be more comprehensive and restrictive than the previous ordinance which had been in place for several years. As a local ordinance, these prohibitions are applicable to the relevant portions of the City of Tulare population. The City will continue to implement these prohibitions through enforcement.

The categories of restrictions and prohibitions in the table above come from State of California publications guiding the preparation of Urban Water Management Plans throughout the state. Examples of specific actions that could fall into each category are discussed next. Where deemed helpful, comments regarding the City's specific implementations are also inserted into the suggested language from the State's publication. The stages indicated above are cumulative so any restriction or prohibition that begins in a lower stage continues and is added to in a higher stage. A copy of the adopted ordinance can be reviewed in attachment H.

As described in Chapter 8, the City's ordinance applies to landscape irrigation, commercial, industrial, and institutional establishments. The ordinance contains restrictions and prohibitions related to water features and swimming pools (as now defined by State law). The City of Tulare's ordinance treats swimming pools and spas separately from all other water features.

Under the ordinance, customers must repair leaks, breaks, and malfunctions in a timely manner, requires automatic shut of hoses, prohibits the use of potable water for construction and dust control, and other water waste prohibitions.

Metering

CWC 526

(a) Notwithstanding any other provisions of law, an urban water supplier that, on or after January 1, 2004, receives water from the federal Central Valley Project under a water service contract or subcontract... shall do both of the following:

(1) On or before January 1, 2013, install water meters on all service connections to residential and nonagricultural commercial buildings... located within its service area.

CWC 527

(a) An urban water supplier that is not subject to Section 526 shall do both the following:

(1) Install water meters on all municipal and industrial service connections located within its service area on or before January 1, 2025.

This DMM has recently become more feasible for continued successful implementation because the City was significantly metered by the end of 2010. Municipal and institutional water users were fully metered by the end of 2013. At this time the City is 100% metered and has begun to review and replace its oldest in-service meters to ensure accuracy. Currently, the City is planning a review of options and costs for transitioning into a fixed-network AMR metering network that would improve timeliness of meter data collection and more detailed data that can be used to implement conservation measures more effectively.

Conservation Pricing

Conservation pricing requires that water rates encourage conservative water use by all customers. The City's baseline water rate structure (Resolution No. 12-05, Appendix J) is applicable to all of its water customers. The resolution does identify tiered consumption pricing; however, this pricing model is based on the cost to deliver service and is not intended to induce conservation on its own merit.

The City is currently working on a rate study that will be more inclusive of much needed capital improvement projects. If passed by a Prop. 218 protest vote then it is expected that the rates will further increase and this increase is expected to have secondary conservation effects.
To implement this DMM, the City will continue to develop and update its tiered rate structure to proxy as conservation pricing to the extent supported by related expenses. The rate structure will continue to be enforced and applied to appropriate service connections. Industrial, and some commercial accounts are billed in their own rate categories which recognizes their invariable water-consuming processes, but the tiered structure matches the cost of additional capacity for peak usage by the City's residential customer base. The effect of causing those who are stimulating the system capacity needs to pay the full costs is that water conservation will be encouraged.

Implementation of these pricing structures will include providing additional public education to customers on water conservation measures to minimize their monthly water use and improve their efficient use of water. Implementation of this DMM should be coordinated with planned public education efforts. This DMM is implemented on an on-going, year-round basis. The tiered rate structure will be applied to all customers for every billing cycle.

The effectiveness of conservation pricing is not possible to compute. Because implementation of the City's tiered rate structure coincided with other significant factors (drought related conservation, increased water waste enforcement, and public education) it is not possible to separate the effects of each. The City is considering ways to segregate the impacts of each factor for purposes of isolating the effects of each on conservation.

Public Education and Outreach

This program consists of distributing information to the public through a variety of methods including brochures, radio and television, school presentations and videos, and web sites.
The City has implemented this DMM. The City posts its water conservation schedules online and includes conservation information in its annually-distributed Consumer Confidence Report (CCR). Yearly CCRs are available on the City's website. The City has also begun to implement

a semi-annual town hall meeting open to the public to address water and conservation related issues and concerns.

To continue to implement this DMM, the City will include water conservation information available to the public in a variety of its published materials. City staff, particularly the City's Department of Public Works, will have staff whose responsibilities include providing conservation information to the public when appropriate.

This DMM will be implemented on an on-going, year-round basis. The City has not established a method to evaluate the effectiveness of this DMM. The City has not historically tracked actual water savings associated with the implementation of this DMM, as these savings are difficult to accurately isolate and attribute solely to outreach efforts. Therefore, estimates of existing conservation savings related to this DMM are not available.

Programs to Assess and Manage Distribution System Real Loss

The reader is referred to Chapter 4 for more information on this is topic. A water audit is a process of accounting for water use throughout a water system in order to quantify the unaccounted-for water. Unaccounted-for water is the difference between metered production and metered consumption on a system-wide basis. A leak detection program typically consists of both visual inspection as well as audible inspection. Visual inspection includes the inspection of distribution system appurtenances (e.g., fire hydrants, valves, meters, etc.) to identify obvious signs of leakage. To perform audible leak detection, specialized electronic listening equipment is used to detect the sounds associated with distribution system leakage. This process allows the agency to pinpoint the location of suspected leaks.

This DMM has been implemented by the City. This DMM has recently become more feasible for continued successful implementation because the City was fully metered by the end of 2013, including parks and municipal facilities. The City has replaced all residential hand-read meters with radio meters. With fully-metered service, the City can now compare the water produced to water delivered and make more accurate water loss approximations. In addition to full metering, the City has reviewed the large diameter meters that service industrial water consumption accounts and replaced 19 of them based on age and levels of inaccuracy. This will provide a further refined view of gross consumption. Additionally, the City Municipal Code includes guidelines and penalties to encourage customers to repair leaks.

According to the 2005 UWMP, the City hired an outside contractor to determine the existence and extent of subsurface leaks within the distribution. The contractor determined that the entire system contained only minimal leaks and that the City's overall maintenance programs have served well in preserving the integrity of the system. If the City suspects that new leaks are occurring in the system, the City will take appropriate steps to perform a system audit.

To continue to implement this DMM, the City will perform audits on its water distribution system, on an ongoing basis, to monitor system losses. The City will also continue to monitor and inspect its high-consumption, non-residential customers, replacing metering equipment as necessary to ensure the accuracy of meters in the ground. The city will engage in preventative

repair specific to leak concerns in places it believes will be susceptible to leakage in the immediate future and respond to potential leaks as they arise to limit system losses.

This DMM will continue to be implemented on an ongoing, as-needed basis. The City will evaluate its water system auditing program based on the successful identification of system leaks and unauthorized uses, and the subsequent repair, replacement, or prevention of such leaks or uses.

Since 2013 the City has been refining its methods and tracking more accurately the difference between pumped water and delivered water. The City's subsurface leak audit, as identified in the 2005 UWMP, did not result in considerable water savings because it was determined that there were only minimal leaks in the system. Recent City water-accounting reflects that this is still the case. If substantial system losses begin to be reflected, the City will take measures to correct those losses. If, in the future, the City finds that there is a considerable amount of unaccounted-for water leaving the system and makes repairs based on a system audit, conservation savings may be assessed at that point. As the City embarks on a capital program of pipeline upgrades and street rehabilitation (which will cause additional pipeline upgrades), City staff plan to investigate incorporating newer technology that will allow more real-time monitoring of pipeline sections for leaks.

Of course, it must be noted that whether these are "real losses" or not is debatable. Any water that leaks from the pipelines is returned to the basin and thereby actually recharges the basin. The real "losses" are in electricity to have pumped it (with any related environmental consequences), but the water itself is not "lost" to the basin.

Water Conservation Program Coordination and Staffing Support

A Conservation Coordinator is an ongoing component of a City's water conservation program. The conservation coordinator would be responsible for implementing and monitoring the City's water conservation activities.

The City has implemented this DMM. Conservation coordination duties are carried out by the City's Water Manager in the Public Works Department, along with the Management Analyst and Department Assistant.

To implement this DMM, the City's conservation coordinator will manage all efforts associated with water conservation in the City. Water conservation efforts may include, but are not limited to, promoting public education, developing marketing campaigns, implementing of conservation programs, and providing information to other City departments on water conservation opportunities.

Water conservation coordination has been implemented on an on-going, year-round basis. The City has not developed a method to evaluate the effectiveness of the conservation coordinator. In lieu of a direct measure, the City correlates changes in consumption data with water waste ticketing rates.

The City has not historically tracked the conservation savings associated with this DMM. Water savings directly resulting from this program are difficult to quantify. The City expects that through the existence of the conservation coordinator and associated conservation programs and opportunities that some water savings will occur. Over time and the further development of data, Staff expects to leverage a correlation between Conservation Coordinator efforts and conservation savings.

Other Demand Management Measures

The City of Tulare has aggressively pursued water conservation savings, however its past and current efforts can all be captured by one of the DMM's listed above. Currently, the City is on track to achieve or exceed its 2020 conservation target, however, should that trend change then the City will review its conservation efforts and pursue additional methods that may not currently be accounted for by the above listed DMM's.

Implementation over the Past Five Years

CWC 10631

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

(1)(A) … a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years.

The City has taken action in several of the water demand management measures in the past five years.

Ordinance

In 2014 the City revised its Water Conservation Ordinance to enhance it and the City moved from Stage 2 to Stage 3 in the Water Conservation Stages.

Metering

Over the past five years the City completed the metering of all accounts, including adding new meters to 137 City locations in parks and at public facilities. In 2014 the City replaced 19 very large meters on industrial accounts that were older and suspected of reading low.

Conservation Pricing

As extensively discussed above and in Chapter 8, the City doubled average residential billings based on new charges adopted in early 2013. The increases were staged over a five year period with the second to last increase taking effect in January 2016. The City is engaged in a review and likely updating of its rates in Spring 2016. The City also adopted a drought surcharge in 2013 that added a surcharged amount onto all City accounts to deal with costs related to the drought.

Public Education and Outreach

The programs described above and in Chapter 8 were either expanded or started in the last five years. The City has hired two employees within the last year for water waste enforcement which is included in this program.

Water Distribution System Losses
The City began a more systematic approach to reconciling the water pumped to the water delivered in 2013. This approach has been used to identify missing or broken meters and to adjust meter readings to facilitate the measurement. The City's system appears to be suffering from a leakage percentage that is lower than State standards and is generally lower than engineering best practices would suggest. This report is presented to the Board of Public Utilities, the governing body over the water fund, on a basis that is at least quarterly.

As the City embarks on its street renovation program to rehabilitate at least five miles of streets per year, many of these street have the oldest water lines and their condition will be reviewed for possible replacement and inspected for evidence of leakage.

Water Conservation Program Coordination and Staffing Support
As discussed above and in Chapter 8 the City added staff for water conservation enforcement. The City has also enlisted the assistance of all staff in any City department that is in the field for purposes of reporting running water or potential waste. These outside working staff are to report such observations to water department staff. The City has begun working closely with school districts and other agencies within the City to secure their cooperation with regard to conservation.

Other Demand Management Measures
In its Hydrological Enterprise Program strategic statement, adopted in December 2015, the Board of Public Utilities has expressly recognized the importance of groundwater management and natural resource preservation as part of the program. The Board has set a target of zero net extractions as measured by an official City water budget as a strategic objective. These strategies are identified in Chapter 7 within the Hydrological Enterprise Program strategic statement. Appendix A

Planned Implementation to Achieve Water Use Targets

CWC 10631

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

(1)(A) ...The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.

As discussed just above, the City has implemented, either totally or in part, all of the demand management measures described in California Water Code 10631. The City plans to raise funds and seek alternative new funding for purposes of accomplishing the zero net extractions objective within the Hydrological Enterprise Program. This is likely to mean changing the way that Tulare residents view the types of landscaping that the local water resources are capable of supporting. The City is also in progress with regard to imposing full cost rate structuring so that all water users pay their fair proportionate share of the services received. These services include the regulatory costs and burdens imposed with regard to the resource management needed to continue to provide water. This economic incentive should be helpful in controlling water consumption.

The City is on target to meet its target of 240 gpcd in 2020, having already exceeded its goal at the 2015 midpoint (achieved 255 gpcd versus the 270 gpcd 2015 goal). It is very likely that the City will remain in Stage 3 of the Water Conservation Ordinance stages which is very likely to make up much of the 15 gpcd difference between present consumption and 2020-allowed consumption.

MEMBERS OF THE CALIFORNIA URBAN WATER CONSERVATION COUNCIL

CWC 10631

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

In 1991 (amended September 16, 1999), an MOU regarding urban water conservation in California was made that formalizes an agreement between Department of Water Resources (DWR), water utilities, environmental organizations, and other interested groups to implement DMMs and make a cooperative effort to reduce the consumption of California's water resources. This MOU is administered by the California Urban Water Conservation Council (CUWCC). The City of Tulare (City) is not currently a signatory of the MOU and is therefore not a member of CUWCC. The City may consider becoming a member of the CUWCC in the future.

However, the City realizes the importance of the BMPs to ensure a reliable future water supply. The City is committed to implementing water conservation and water recycling programs to maximize sustainability in meeting future water needs for its customers. Due to the continued effective water conservation measures implemented by the City, the 2015 per capita water use has dropped to roughly 255 gallons per capita per day (gpcd) from 329 gpcd in 2004. The City will continue to monitor and adjust as necessary to achieve the target by 2020.

/////

Chapter 10 – Plan Adoption, Submittal and Implementation

Inclusion of all 2015 Data

The City has included data representing the full fiscal year ending June 30, 2015, replacing projections used in drafting early drafts with finalized data collected after the completion of the calendar year.

Notice of Public Hearing

CWC 10621

(b) Every urban water supplier required to prepare a plan shall… at least 60 days prior to the public hearing on the plan … notify any city or county within which the supplier provides waters supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.

CWC 10642

…The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area…

60 Day Notification

A 60 day notification was distributed to the City of Tulare, Tulare County CAO, Tulare County RMA, Kaweah Delta Water Conservation District, LAFCO, TCAG, Tulare Irrigation District, Tulare Joint Union High School District, Tulare City Schools District, on December 8, 2015.

Notice of Public Hearing

Table 10-1 Wholesale: Notification to Cities and Counties		
	Supplier has notified more than 10 cities or counties in accordance with CWC 10621 (b) and 10642. **Include a separate list of the cities and counties that were notified.** Location of of this list in the UWMP_____	
	Supplier has notified 10 or fewer cities or counties. **Complete the table below.**	
City Name	60 Day Notice	Notice of Public Hearing
	☐	☐
Up to 10 entries allowed		
County Name *Drop Down List*	60 Day Notice	Notice of Public Hearing
	☐	☐
Up to 10 entries allowed		
NOTES:		

Notice to the Public

CWC 10642

...Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection...Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code...

Government Code 6066

Publication of notice pursuant to this section shall be once a week for two successive weeks. Two publications in a newspaper published once a week or oftener, with at least five days intervening between the respective publication dates not counting such publication dates, are sufficient. The period of notice commences upon the first day of publication and terminates at the end of the fourteenth day, including therein the first day.

The City of Tulare noticed the public of a future hearing for plan adoption in '*the publication name*' on *Date 1 and Date 2*. Appendix B

Public Hearing and Adoption

CWC 10642

...Prior to adopting a plan, the urban water supplier shall hold a public hearing thereon.

CWC 10608.26

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

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

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

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

The City prepared the 2015 UWMP during the winter of 2015-16. The plan was updated after the public hearing and adopted by its City Council on March 1, 2015. A copy of the adopting resolution is provided in Appendix L.

Adoption

CWC 10642

...After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

Plan Submittal

CWC 10621

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

CWC 10644

(a)(1) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption.

CWC 10635

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

The City submitted the UWMP to the DWR on _____. Within 30 days of submitting the UWMP to DWR, the adopted UWMP was made available for public review during normal business hours at the locations specified for the viewing of the Draft 2015 UWMP and copies of the UWMP were submitted to the California State Library and Tulare County. Appendix L provides verification that the adopted UWMP was submitted to the agencies listed above within the required timeline.

If major changes are made to this 2015 UWMP, the City will hold an additional public hearing and City Council will readopt the plan.

Public Availability

CWC 10645

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

Amending an Adopted UWMP

CWC 10621

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

CWC 10644

(a)(1) Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

Appendix Table

A. Hydraulic Enterprise Plan Resolution and Policy
B. Public notice – Review of 2015 Urban Water Management Plan
C. Maps
    1. City of Tulare
    2. KDWCD Map
    3. TID Map
    4. TID Depth to Groundwater
D. SB X7-7 Tables
E. Kaweah Delta Conservation District 2006 Groundwater Management Plan
F. Tulare Irrigation District 2010 Groundwater Management Plan
G. Mid-Kaweah Groundwater Sustainability Agency JPA
H. City of Tulare Water Conservation Municipal Code
I. Drought Surcharge Resolution
J. Rate Resolution 12-05
K. City of Tulare & Tulare Irrigation District Kaweah Ditch Line Agreement
L. Adopting Resolution – 2015 Urban Water Management Plan (DRAFT)