

2020 Urban Water Management Plan

PREPARED FOR

City of Woodland



PREPARED BY



2020 Urban Water Management Plan

Prepared for

City of Woodland

Project No. 204-60-20-62



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LIST OF ACRONYMS AND ABBREVIATIONS

°F	Degrees Fahrenheit
AB	Assembly Bill
Act	Urban Water Management Planning Act
AF	Acre-Feet
AFY	Acre-Feet Per Year
ASR	Aquifer Storage and Recovery
AWIA	America’s Water Infrastructure Act
AWWA	American Water Works Association
BMP	Best Management Practices
CalWEP	California Water Efficiency Partnership
CF	Cubic Feet
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CWC	California Water Code
DMM	Demand Management Measures
DOF	Department of Finance
DPW	Department of Public Works
DRA	Drought Risk Assessment
DWR	Department of Water Resources
DWWSP	Davis Woodland Water Supply Project
EC	Electrical Conductivity
EPA	Environmental Protection Agency
FY	Fiscal Year
GMP	Groundwater Management Plan
GPCD	Gallons Per Capita Per Day
GSA	Groundwater Sustainability Agencies
GSP	Groundwater Sustainability Plan
HMP	Hazard Mitigation Plan
IPCC	Intergovernmental Panel on Climate Change
kWh	Kilowatt Hour
MCL	Maximum Contaminant Level
MG	Million Gallons
MGD	Million Gallons Per Day
MOU	Memorandum of Understanding
Msl	Mean Sea Level
MWEL0	Model Water Efficient Landscape Ordinance
my	Million Years
NAICS	North American Industry Classification System
NPDES	National Pollutant Discharge Elimination System
OEHA	Office of Environmental Health Hazard Assessment
RD 2035	Reclamation District 2035

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RHNP	Regional Housing Needs Plan
ROConLTO COS	Re-Initiation of Consultation on Long-Term Operations, Current Operations Scenario
RRA	Risk and Resilience Assessment
RWTF	Regional Water Treatment Facility
SACG	Sacramento Area Council of Governments
SB X7-7	Senate Bill X7-7
SGMA	Sustainable Groundwater Management Act of 2014
SP-1	Specific Plan 1
SP-2	Specific Plan 2
SP-3	Specific Plan 3
State Board	State Water Resources Control Board
SWP	State Water Project
Target	2020 Urban Water Use Target
UWMP	Urban Water Management Plan
WDCWA	Woodland Davis Clean Water Agency
WMC	Woodland Municipal Code
WPCF	Water Pollution Control Facility
WSCP	Water Shortage Contingency Plan
WUE	Water User Efficiency
YSGA	Yolo Subbasin Groundwater Agency

Executive Summary

INTRODUCTION

An Urban Water Management Plan (UWMP) helps water suppliers assess the availability and reliability of their water supplies and current and projected water use to help ensure reliable water service under different conditions. This water supply planning is especially critical for California currently, as climate change is resulting in changes in rainfall and snowfall which impact water supply availability and development is occurring throughout the State resulting in increased needs for reliable water supplies. The Urban Water Management Planning Act (Act) requires larger water suppliers that provide water to urban users (whether directly or indirectly) to develop UWMPs every five years. UWMPs evaluate conditions for the next 20 years, so these regular updates ensure continued long-term planning.

Since the City of Woodland (City) provides water service directly to more than 3,000 connections in its service area, it is required to prepare a UWMP.

This Executive Summary serves as a Lay Description of the City's UWMP, as required by California Water Code §10630.5.

CALIFORNIA WATER CODE REQUIREMENTS

The California Water Code documents specific requirements for California water suppliers. The Act is included in the California Water Code and specifies the required elements of a UWMP, including discussing the City's water system and facilities, calculating how much water its customers use (i.e., water demand) and how much the City can supply, and detailing how the City would respond during a drought or other water supply shortage. Also, a UWMP must describe what specific coordination steps were taken to prepare, review, and adopt the plan.

The Act has been revised over the years. The Water Conservation Act of 2009 (also known as SB X7-7) required retail water agencies to establish water use targets for 2015 and 2020 that would result in statewide water savings of 20 percent by 2020. In 2020, retail agencies are required to report on their compliance with SB X7-7.

The 2014 to 2017 drought has led to further revisions to the Act under the 2018 Water Conservation Legislation to improve water supply planning for long-term reliability and resilience to drought and climate change. Changes presented by the legislation include:

- Five Consecutive Dry-Year Water Reliability Assessment: Analyze water supply reliability for five consecutive dry years over the planning period of this UWMP (see Chapter 7).
- Drought Risk Assessment: Assess water supply reliability from 2021 to 2025 assuming that the next five years are dry years (see Chapter 7).
- Seismic Risk: Identify the seismic risk to the water supplier's facilities and have a plan to address the identified risks; the region's Local Hazard Mitigation Plan may address this requirement (see Chapter 8).
- Energy Use Information: Include reporting on the amount of electricity used to obtain, treat, and distribute water if data are available (see Chapter 6).



Executive Summary

- Water Shortage Contingency Plan (WSCP): Update the water supplier’s plan to include an annual process for assessing potential gaps between planned supply and demands; conform with the State’s standard water shortage levels (including a shortage level greater than 50 percent) for consistent messaging and reporting; and provide water shortage responses that are locally appropriate (see Chapter 8).
- Lay Description: Provide a lay description of the findings of the UWMP; this Executive Summary serves as the Lay Description for this 2020 UWMP.

The major components of the City’s 2020 UWMP, including its findings, are summarized below.

CITY WATER SERVICE AREA AND FACILITIES

The City water facilities produce, treat, store, and deliver drinking water to its customers. The City serves the entire City of Woodland.

The City’s water supplies include surface water from the Sacramento River, aquifer storage recovery (ASR) wells and standard groundwater wells. The majority of the City’s supplies are treated surface water delivered by the Woodland Davis Clean Water Agency (WDCWA). WDCWA diverts water from the Sacramento River through an intake facility just north of Veteran’s Memorial Bridge. These supplies are treated at the WDCWA Regional Water Treatment Facility. The City obtains the rest of its drinking water supplies from ASR wells, which primarily supply stored treated surface water, and intermediate-depth groundwater wells, which draw on native groundwater. The City also has a recycled water system for some non-potable uses. The City operates an extensive network of water pipelines, tanks, and pumping facilities to deliver both drinking water and recycled water to its customers.

CITY WATER USE

The City currently serves a population of approximately 60,700. It anticipates population growth and future planned development in its water service area, which would increase demand for water. Thorough and accurate accounting of current and future water demands is critical for City planning efforts. To continue delivering safe and reliable drinking water, the City must know how much water its customers currently use and how much they expect to use in the future.

Projected future water demands have been estimated based on the anticipated growth as defined by the General Plan Update 2035, adopted by the Woodland City Council in 2017. Future study areas and planned development in the City water service area were reviewed and confirmed with the City’s Community Development Department. Based on the anticipated growth, water demands in the City water service area are expected to increase approximately 1.09 percent per year through 2045.



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CITY WATER SUPPLIES

The City has the following existing potable water supplies:

- Treated surface water purchased from the WDCWA
- Groundwater pumped from City-owned and operated wells from the underlying Yolo Groundwater Subbasin
- Stored treated surface water pumped from City-owned and operated ASR wells

To reliably meet current and future water demands, the City plans to install two new ASR wells over the next 20 years. In addition, the City will continue to work with WDCWA and support its future projects to ensure long-term availability of surface water supplies. The City plans to continue using groundwater as an emergency supply in the future and plans to maintain and replace groundwater wells as needed to provide a minimum emergency supply capacity in the future. However, the City's ASR program will be operated preferentially over the use of the native groundwater blending wells, with the goal of zero groundwater use, if possible.

CONSERVATION TARGET COMPLIANCE

In accordance with SB X7-7, the City must meet a per capita water use target of 232 gallons per person per day by 2020 for its water service area. Looking at the City water service area population and water use in 2020, the City met and exceeded its water conservation target with a per capita water use of 155 gallons per person per day.

WATER SERVICE RELIABILITY

The California Water Code requires water suppliers to evaluate their water service reliability by examining the impact of drought on their water supplies and comparing those reduced supplies to water demands. Specifically, agencies must project available water supplies during a single dry year and five consecutive dry years using historical records.

The City is well-positioned to withstand the effects of a single dry year and a five-year drought at any period between 2025 and 2045. The City's drought risk was specifically assessed between 2021 and 2025, assuming that the next five years are dry years. In each case, water supplies comfortably exceed water demands. This remains true whether the drought occurs in 2021, 2045, or any year between.

WATER SHORTAGE CONTINGENCY PLAN

A WSCP describes an agency's plan for preparing and responding to water shortages. The City updated its WSCP to include its process for assessing potential gaps between planned water supply and demands for current year and the next potentially dry year. It aligned its water service area's water shortage levels with the State for consistent messaging and reporting and planned for locally appropriate water shortage responses. The WSCP may be used for foreseeable and unforeseeable events. The updated WSCP is adopted concurrently with this UWMP by separate resolution so that it may be updated as necessary to adapt to changing conditions.



Executive Summary

UWMP PREPARATION, REVIEW, AND ADOPTION

While preparing its UWMP, the City notified other stakeholders (e.g., Yolo County and the general public) of its preparation, its availability for review, and the public hearing prior to adoption. The City encouraged community participation in the development of the 2020 UWMP using newspaper advertisements and web-based communication. These public notices included the time and place of the public hearing, as well as the location where the plan would be available for public inspection.

The public hearing provided an opportunity for City water users and the general public to become familiar with the 2020 UWMP and ask questions about the City's water supply, its continuing plans for providing a reliable, safe, high-quality water supply, and its plans to address potential water shortages. Following the public hearing, the Woodland City Council adopted the 2020 UWMP on June 1, 2021. A copy of the adopted Plan was provided to the Department of Water Resources and is available on the City's website: <https://www.cityofwoodland.org/691/Water>.

CHAPTER 1

Introduction

This chapter provides an introduction and overview of the City of Woodland (City) 2020 Urban Water Management Plan (UWMP) including the importance and extent of the City’s water management planning efforts, changes since the preparation of the City’s 2015 UWMP, a lay description of the City’s 2020 UWMP, and the organization of the City’s 2020 UWMP. This 2020 UWMP has been prepared jointly by City staff and West Yost.

1.1 INTRODUCTION

The Urban Water Management Planning Act (Act) was originally established by Assembly Bill (AB) 797 on September 21, 1983. Passage of the Act was recognition by state legislators that water is a limited resource and a declaration that efficient water use and conservation would be actively pursued throughout the state. The primary objective of the Act is to direct “urban water suppliers” to develop a UWMP which provides a framework for long-term water supply planning, and documents how urban water suppliers are carrying out their long-term resource planning responsibilities to ensure adequate water supplies are available to meet existing and future water demands. A copy of the current version of the Act, as incorporated in Sections 10610 through 10657 and 10608 of the California Water Code (CWC), is provided in Appendix A of this plan.

1.2 IMPORTANCE AND EXTENT OF CITY’S WATER MANAGEMENT PLANNING EFFORTS

The purpose of the UWMP is to provide a planning tool for the City for developing and delivering municipal water supplies to the City’s water service area. This UWMP provides the City a water management action plan for guidance as water conditions change and management conditions arise.

The City has had a long history of providing clean and reliable water to its customers. The City’s UWMP is a comprehensive guide for planning for a safe and adequate water supply.

1.3 CHANGES FROM 2015 UWMP

The 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 2007 to 2009 drought, 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 Senate Bill Seven of the Senate’s Seventh Extraordinary Session of 2009 (SB X7-7). This act required agencies to establish water use targets for 2015 and 2020 that would result in statewide water savings of 20 percent by 2020. The 2014 to 2017 drought has led to further amendments to the California Water Code to improve on water supply planning for long-term reliability and resilience to drought and climate change.

Summarized below are the major additions and changes to the California Water Code since the City’s 2015 UWMP was prepared.

- **Five Consecutive Dry-Year Water Reliability Assessment** [CWC §10635(a)]. The Legislature modified the dry-year water reliability planning from a “multiyear” time period to a “drought lasting five consecutive water years” designation. This statutory change requires the urban water supplier to analyze the reliability of its water supplies to meet its water use



over an extended drought period. This requirement is addressed in the water use assessment presented in Chapter 4, the water supply analysis presented in Chapter 6, and the water reliability determinations in Chapter 7 of this plan.

- **Drought Risk Assessment** [CWC §10635(b)]. The California Legislature created a new UWMP requirement for drought planning because of the significant duration of recent California droughts and the predictions about hydrological variability attributable to climate change. The Drought Risk Assessment (DRA) requires the urban water supplier to assess water supply reliability over a five-year period from 2021 to 2025 that examines water supplies, water uses, and the resulting water supply reliability under a reasonable prediction for five consecutive dry years. The DRA is discussed in Chapter 7 based on the water use information in Chapter 4; the water supply analysis is presented in Chapter 6; and the water reliability determinations are discussed in Chapter 7 of this plan.
- **Seismic Risk** [CWC §10632.5]. The Water Code now requires urban water suppliers to specifically address seismic risk to various water system facilities and to have a mitigation plan. Water supply infrastructure planning is correlated with the regional hazard mitigation plan associated with the urban water supplier. The City's seismic risk is discussed in Chapter 8 of this plan.
- **Water Shortage Contingency Plan** [CWC §10632]. In 2018, the Legislature modified the UWMP laws to require a Water Shortage Contingency Plan (WSCP) with specific elements. The WSCP is a document that provides the urban water supplier with an action plan for a drought or catastrophic water supply shortage. Although the new requirements are more prescriptive than previous versions, many of these elements have long been included in WSCPs, other sections of UWMPs, or as part of the urban water supplier's standard procedures and response actions. Many of these actions were implemented by the urban water suppliers during the last drought to successfully meet changing local water supply challenges. The WSCP is used by DWR, the State Water Board, and the Legislature in addressing extreme drought conditions or statewide calamities that impact water supply availability. The City's WSCP is presented in Chapter 8 of this plan.
- **Groundwater Supplies Coordination** [CWC §10631(b)(4)]. In 2014, the Legislature enacted the Sustainable Groundwater Management Act to address groundwater conditions throughout California. Water Code now requires 2020 UWMPs to be consistent with Groundwater Sustainability Plans in areas where those plans have been completed by Groundwater Sustainability Agencies. This requirement is addressed in Chapter 6 of this plan.
- **Lay Description** [CWC §10630.5]. The Legislature included a new statutory requirement for the urban water supplier to include a lay description of the fundamental determinations of the UWMP, especially regarding water service reliability, challenges ahead, and strategies for managing reliability risks. This section of the UWMP could be viewed as a go-to synopsis for new staff, new governing members, customers, and the media, and it can ensure a consistent representation of the Supplier's detailed analysis. The Executive Summary serves as a Lay Description of the City's UWMP.
- **Water Loss Management** [CWC §10608.34(a)(1)]. The Legislature included a requirement for urban water suppliers to report on their plan to meet the water loss performance standards in their 2020 UWMPs. This requirement is addressed in the Demand Management Measures presented in Chapter 9 of this plan.



1.4 DEMONSTRATION OF CONSISTENCY WITH THE DELTA PLAN FOR PARTICIPANTS IN COVERED ACTIONS

Urban water suppliers that anticipate participating in or receiving water from a proposed project that involves transferring water through, exporting water from, or using water in the Sacramento-San Joaquin Delta (Delta) are required to provide information in their 2015 and 2020 UWMPs that can then be used in the certification of consistency process to demonstrate consistency with Delta Plan Policy WR P1, *Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance* (California Code Reg., tit. 23, §5003). A proposed project may be a covered action if it presents a multiyear water transfer, conveyance facility, or new diversion that involves transferring water through, exporting water from, or using water in the Delta.

The City does not have a defined, proposed project or proposed covered action associated with the Delta at this time. Thus, demonstration of consistency with Delta Plan Policy WR P1 is not provided in this 2020 UWMP. In the future, if the City moves forward with a defined, proposed covered action, the City will comply with all State required application requirements.

1.5 PLAN ORGANIZATION

This 2020 UWMP contains the appropriate sections and tables required per CWC Division 6, Part 2.6 (Urban Water Management Planning Act), included in Appendix A of this 2020 UWMP, and has been prepared based on guidance provided by the California Department of Water Resources (DWR) in their “2020 Urban Water Management Plans Guidebook for Urban Water Suppliers” (DWR Guidebook).

This 2020 UWMP is organized into the following chapters:

- Chapter 1: Introduction
- Chapter 2: Plan Preparation
- Chapter 3: System Description
- Chapter 4: Water Use Characterization
- Chapter 5: Conservation Target Compliance
- Chapter 6: System Supplies
- Chapter 7: Water System Reliability and Drought Risk Assessment
- Chapter 8: Water Shortage Contingency Plan
- Chapter 9: Demand Management Measures
- Chapter 10: Plan Adoption, Submittal, and Implementation

Chapter 1 Introduction



This 2020 UWMP also contains the following appendices of supplemental information and data related to the City's 2020 UWMP:

- Appendix A: Urban Water Management Planning Act
- Appendix B: DWR 2020 Urban Water Management Plan Tables
- Appendix C: DWR 2020 Urban Water Management Plan Checklist
- Appendix D: Agency and Public Notices
- Appendix E: Distribution System Water Loss Audit
- Appendix F: SB X7-7 Verification and Compliance Forms
- Appendix G: DWR Bulletin 118: Sacramento Groundwater Basin Yolo Subbasin
- Appendix H: Recycled Water Opportunities Evaluation
- Appendix I: Water Shortage Contingency Plan
- Appendix J: Municipal Code: Chapter 13.16 and Chapter 13.32
- Appendix K: UWMP Adoption Resolution

Furthermore, this 2020 UWMP contains all the tables recommended in the DWR Guidebook, both embedded into the UWMP chapters where appropriate and included in Appendix B.

DWR's Urban Water Management Plan Checklist, as provided in the DWR Guidebook, has been completed by West Yost to demonstrate the plan's compliance with applicable requirements. A copy of the completed checklist is included in Appendix C.

CHAPTER 2

Plan Preparation

This chapter describes the preparation of the City’s 2020 UWMP and WSCP, including the basis for the preparation of the plan, individual or regional planning, fiscal or calendar year reporting, units of measure, and plan coordination and outreach.

2.1 BASIS FOR PREPARING A PLAN

The Act requires every “urban water supplier” to prepare and adopt an UWMP, to periodically review its UWMP at least once every five years and make any amendments or changes which are indicated by the review. An “urban water supplier” is defined as 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 (AFY).

The City manages Water System CA5710006. As shown in Table 2-1 (DWR Table 2-1), the City provided water to 16,767 customer connections and supplied 10,504 AF of water in 2020 to retail customers. The City supplies water to more than 3,000 retail customers and, therefore, is required to prepare an UWMP. The City’s last UWMP, the 2015 UWMP, was adopted by the City Council on June 7, 2016.

Table 2-1. Public Water Systems (DWR Table 2-1 Retail)

Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020 *
<i>Add additional rows as needed</i>			
CA5710006	City of Woodland	16,767	10,504
TOTAL		16,767	10,504
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.			
NOTES: Volumes are in AF.			

2.2 REGIONAL PLANNING

As described in Section 2.3 below, the City has prepared this 2020 UWMP on an individual reporting basis, not part of a regional planning process.

2.3 INDIVIDUAL OR REGIONAL PLANNING AND COMPLIANCE

This 2020 UWMP has been prepared on an individual reporting basis covering only the City’s service area, see Table 2-2 (DWR Table 2-2). The City is a member and participant in several regional groups that do water planning in the region. These groups include the Westside Sacramento River Integrated Regional Water Management Group, the Water Resources Association of Yolo County, the Woodland Davis Clean Water Agency (WDCWA), and the Yolo Subbasin Groundwater Agency. Although the City is closely involved with



each of these regional organizations, the City has opted to not pursue a Regional Urban Water Management Plan with any of these entities at this time. As described below in Section 2.5, the City has notified and coordinated planning and compliance with appropriate regional agencies and constituents.

Table 2-2. Plan Identification (DWR Table 2-2)

Select Only One	Type of Plan		Name of RUWMP or Regional Alliance <i>if applicable</i> (select from drop down list)
<input checked="" type="checkbox"/>	Individual UWMP		
	<input type="checkbox"/>	Water Supplier is also a member of a RUWMP	
	<input type="checkbox"/>	Water Supplier is also a member of a Regional Alliance	
<input type="checkbox"/>	Regional Urban Water Management Plan (RUWMP)		

2.4 FISCAL OR CALENDAR YEAR AND UNITS OF MEASURE

The City is a water retailer.

The 2020 UWMP has been prepared on a calendar year basis, with the calendar year starting on January 1 and ending on December 31 of each year. Water use and planning data for the entire calendar year of 2020 has been included.

The water volumes in this 2020 UWMP are reported in units of AF.

The City’s reporting methods for this 2020 UWMP are summarized in Table 2-3 (DWR Table 2-3).



Table 2-3. Agency Identification (DWR Table 2-3)

Type of Supplier (select one or both)	
<input type="checkbox"/>	Supplier is a wholesaler
<input checked="" type="checkbox"/>	Supplier is a retailer
Fiscal or Calendar Year (select one)	
<input checked="" type="checkbox"/>	UWMP Tables are in calendar years
<input type="checkbox"/>	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins (mm/dd)	
Units of measure used in UWMP * (select from drop down)	
Unit	AF
<i>* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>	

2.5 COORDINATION AND OUTREACH

This section includes a discussion of the City’s inter-agency coordination and coordination with the general public. The UWMP Act requires the City to coordinate the preparation of its UWMP with other appropriate agencies and all departments within the City, including other water suppliers that share a common source, water management agencies, and relevant public agencies. These agencies, as well as the public, participated in the coordination and preparation of this 2020 UWMP, and are summarized below.

2.5.1 Wholesale and Retail Coordination

Beginning in 2016, the City purchased wholesale treated surface water from the WDCWA. In addition, the City has its own groundwater supplies. The City provides the purchased surface water and groundwater to retail customers. As a retailer, and in accordance with CWC 10631, the City has informed the WDCWA of its projected water use as is shown in Table 2-4 (DWR Table 2-4).

Table 2-4. Water Supplier Information Exchange (DWR Table 2-4 Retail)

The retail Supplier has informed the following wholesale supplier(s) of projected water use in accordance with Water Code Section 10631.
Wholesale Water Supplier Name <i>(Add additional rows as needed)</i>
Woodland-Davis Clean Water Agency



2.5.2 Coordination with Other Agencies and the Community

The City actively encourages community participation in water management activities and specific water-related projects. The City's public participation program includes both active and passive means of obtaining input from the community, such as mailings, public meetings, and web-based communication. The City's website describes on-going projects and posts announcements of planned rate increases to fund these water projects.

As part of the 2020 UWMP update, the City facilitated a public review period. Public noticing, pursuant to Section 6066 of the Government Code, was conducted prior to commencement of a public comment period. Public hearing notices are included in Appendix D of this plan. During the public comment period, a hard copy of the Draft UWMP update was made available at the City's offices during normal business hours and at the Woodland Public Library and an electronic copy was posted on the City's website.

The City also coordinated the preparation of this 2020 UWMP with several agencies, including relevant public agencies that utilize the same water supplies. These agencies included the following:

- City of Woodland
- County of Yolo
- City of Davis
- City of West Sacramento
- Reclamation District 2035
- University of California, Davis
- Water Resources Association of Yolo County
- Westside Sacramento River IRWM Group
- Woodland Chamber of Commerce
- WDCWA
- Yolo County Farm Bureau
- Yolo County Flood Control & Water Conservation District
- Yolo Subbasin Groundwater Agency

The public hearing provided an opportunity for all City water users and the general public to become familiar with the UWMP and ask questions about the City's water supply, in addition to the City's continuing plans for providing a reliable, safe, high-quality water supply.

2.5.3 Notice to Cities and Counties

CWC Section 10621 (b) requires agencies to notify the cities and counties to which they serve water at least 60 days in advance of the public hearing that the plan is being updated and reviewed. On March 25, 2021, a notice of preparation was sent to the cities and counties and other stakeholders, to inform them of the UWMP update process and schedule, and to solicit input for the 2020 UWMP. The notifications to cities and counties, the public hearing notifications, and the public hearing and adoption are discussed in Chapter 10.

CHAPTER 3

System Description

This chapter provides a description of the City’s water system and service area. This description includes the water system facilities, climate, population, and housing within the City’s service area.

3.1 GENERAL DESCRIPTION

The City, incorporated in 1871, is located in the Sacramento Valley, approximately six miles west of the Sacramento River and about 20 miles northwest of the City of Sacramento at the intersection of Interstate 5 and State Route 113. Located within an important agricultural region, the City is completely surrounded by agricultural lands.

The City water system is responsible for delivering treated water to residential, commercial, and landscape customers. As of 2020, the system serves about 16,767 connections within the City’s Urban Limit boundaries.

3.2 SERVICE AREA BOUNDARY MAPS

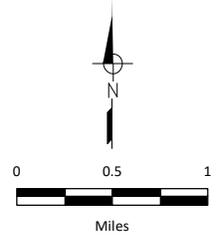
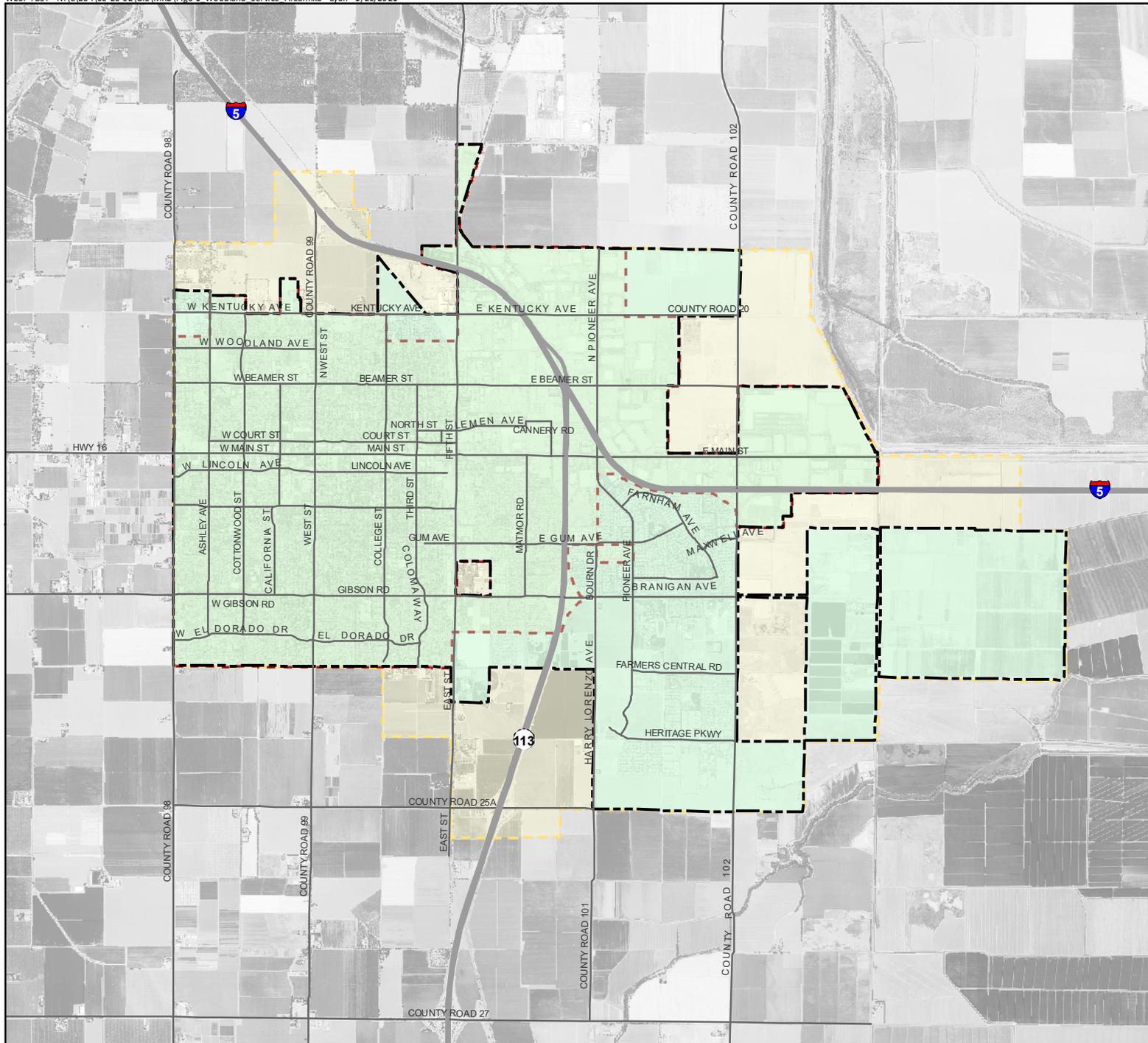
The City and water service area encompass an area of approximately 14.5 square miles. The City serves the entire area encompassed by its Urban Limits including residential, commercial, industrial, and fire use. Figure 3-1 provides a location map of the service area. Municipal water supply for the City is primarily based on treated surface water. Please see additional discussion about the Davis Woodland Water Supply Project in Chapter 6. However, the City also maintains groundwater supplies as a backup to the surface water supplies.

3.3 SERVICE AREA CLIMATE

Woodland has a Mediterranean climate. Summers are hot and dry, and winters are cool and rainy, with an annual average precipitation of approximately 18.5 inches. The local annual average of maximum daily temperature is 76.0 degrees Fahrenheit (°F). The average rainfall over the last six years (2015-2020) was 18.4 inches. The region is subject to wide variations in annual precipitation. Water year 2017 (October 2016 through September 2017) and water year 2019 were relatively wet years with 34.5 and 34.3 inches of rainfall respectively, while water year 2020 was relatively dry with only 8.6 inches of rain. Table 3-1 presents average climatic data for the Woodland area.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Average E_{t_0} , inches ^(a,b)	1.6	2.5	3.8	5.8	7.3	8.0	8.1	7.2	5.6	4.0	2.1	1.6	57.4
Average Max Temperature, °F ^(c)	54.5	60.8	66.8	74.0	82.5	90.5	96.2	94.9	90.1	79.5	65.2	55.2	75.9
Average Min Temperature, °F ^(c)	37.7	40.9	43.8	46.8	51.7	56.5	58.1	56.8	55.6	50.0	42.8	38.0	47.9
Average Rainfall, inches ^(c)	4.0	3.5	2.5	1.3	0.5	0.2	0.0	0.0	0.3	0.9	2.1	3.4	18.5

(a) E_{t_0} = Evapotranspiration
 (b) CIMIS Website: www.cimis.water.ca.gov, Station 226 Woodland, California (May 2011 to November 2020), Monthly Average E_{t_0} Report, Printed November 2020.
 (c) [Western Regional Climate Center \(WRCC\)](http://www.wrcc.dri.edu), Station 049781 Woodland 1 WNW, California. Period of record: 3/1/1906 to 7/31/2020.



-  City Limits (1990)
-  City Limits (2020)
-  Urban Limit Line

Notes:
1. The City serves water to the entire area encompassed by its City Limits (includes residential, commercial, industrial, and fire use).



Figure 3-1
City of Woodland
Water Service Area



These climate characteristics highly influence the City’s water use. As described in Chapter 4, the City’s water use in the summer months is significantly higher than that in the winter, reflecting increased water use for irrigation purposes during the hot, dry summers.

3.4 SERVICE AREA POPULATION AND DEMOGRAPHICS

3.4.1 Service Area Population

The City’s current (2020) service area population is derived from United States Census Bureau data. Because the City’s water service area boundary is the same as the City’s limits, California Department of Finance (DoF) population data for the City is used. The DoF uses an analysis of 2010 census data to update city population estimates for 2011-2020. Service area population is used to determine per capita water demand as described in Chapter 5.

Current and projected service area population is summarized in Table 3-2. DoF estimates the City’s 2020 population to be 60,742. Household size within the City is estimated at about 2.93 persons per household with approximately 21,141 total households in 2020.

Land use planning within the City is undertaken by the Planning Division of the City’s Community Development Department. In 2017, the City adopted a comprehensive update of its General Plan – the General Plan Update 2035. The General Plan Update 2035 provides guidelines for the City on how development will occur in the future. The City’s population projections used in the UWMP are based on DoF population data for 2015 and 2020. These projections represent an anticipated average annual growth rate of 1.09 percent per year. Population projections are summarized in Table 3-2 (DWR Table 3-1). Figure 3-1 shows the City’s approved urban limit line used in the General Plan Update 2035.

Table 3-2. Population – Current and Projected (DWR Table 3-1 Retail)

Population Served	2020	2025	2030	2035	2040	2045(opt)
	60,742	64,139	67,726	71,513	75,513	79,735
<p>NOTES: 2020 population is obtained from the Department of Finance. Future year populations were extrapolated based on a 1.09% growth rate calculated between the 2015 actual population (57,525) and 2020 actual population.</p>						

3.4.2 Other Social, Economic, and Demographic Factors

The City serves a primarily residential and commercial area. The City completed implementation of its Water Metering Program in 2014 and thus water customers are billed based on consumptive water use. The City’s single family residential and commercial users have been fully metered since 2012 and multi-family and parks have been fully metered since 2014. The increased awareness in water use brought by the implementation of water meters, has led to more individual water conservation and cumulative Citywide water savings.



The City has substantial agriculture basis in its economy. The City is surrounded on all sides by agricultural land producing corn, tomatoes, alfalfa, sugar beets, safflower, and wheat. Also, several companies in the City carry out significant seed research and development work. The local groundwater basin's natural recharge is supplemented by percolating irrigation water imported for farming surrounding the City's service area.

3.5 LAND USES WITHIN SERVICE AREA

The City's current land use is majority residential neighborhoods with commercial and employment centers to the north. Smaller land uses include green space and mixed-use corridors (City's 2035 General Plan).

According to the City's 2035 General Plan Update, there are three new growth areas: Specific Plan 1 (SP-1), Specific Plan 2 (SP-2), and Specific Plan 3 (SP-3). Renewable energy sources and water conservation will be encouraged in all three growth areas. SP-1, located in the south, is divided into three sub-areas: SP-1A, SP-1B, and SP-1C. SP-1A and SP-1B will be developed into mixed use neighborhoods, while SP-1C will be residential only. Existing infrastructure within SP-1 will be resized to accommodate the development. SP-2 is located in the east and will be a mixed-use neighborhood with a town center. SP-3 is located in the northwest and is divided into two sub-areas: SP-3A and SP-3B. SP-3A will be mixed-use, while SP-3B will be mostly industrial.



3.6 REFERENCES

California Department of Finance (DoF). May 2020. *E-1 Population Estimates for Cities, Counties, and the State – January 1, 2019 and 2020*. Accessed at <https://www.dof.ca.gov/Forecasting/Demographics/Estimates/E-1/> on January 20, 2021.

California Department of Finance (DoF). May 2020. *E-5 Population and Housing Estimates for Cities, Counties, and the State, 2011-2020*. Accessed at <https://www.dof.ca.gov/Forecasting/Demographics/Estimates/E-5/> on January 20, 2021.

City of Woodland. May 2017. *City of Woodland General Plan Update 2035*. Accessed at <https://www.cityofwoodland.org/DocumentCenter/View/1180/Final-General-Plan-May-16-2017-PDF> on January 20, 2021.

CHAPTER 4

Water Use Characterization

This chapter describes and quantifies the City's past, current, and projected water use. Water demand projections are based on the selected SB X7-7 water use targets combined with the population projections from the City's 2017 General Plan. Accurately tracking and reporting current water demands allows the City to properly analyze the use of their resources and conduct good resource planning. As described in Chapter 3, the City's water service area is mostly residential, metered accounts.

4.1 NON-POTABLE VERSUS POTABLE WATER USE

The City currently provides only potable water to most of its customers. A few City parks and one industrial customer receive non-potable recycled water. Potable water is water that is safe to drink and has had various levels of treatment and disinfection. Raw water is untreated water that is used in its natural state or with minimal treatment. The City does not deliver raw water to any customers in its service area. However, the City plans on implementing raw water use for park irrigation in the future.

Recycled water is municipal wastewater that has been treated to a specified quality to enable it to be used again. Because recycled water demand is highly dependent on its level of treatment, recycled water demand is more selective than potable or raw water demand. The City implemented a recycled water program in 2017 to ease demand on potable water for uses that do not require a drinking standard of water. Further discussion of the recycled water program can be found in Chapter 6.

A complete description of the City's water supplies is also provided in Chapter 6.

4.2 WATER USE BY SECTOR

This section describes the City's past, current, and projected water use by sector through the year 2045 in five-year increments. Water demand projections are based on the selected SB X7-7 water use targets combined with the City's 2017 General Plan projected population for the service area. Demand projections provide the basis for sizing and staging future water facilities to ensure adequate supply. This section identifies the usage among water use sectors including single-family residential, multifamily residential, commercial, industrial, institutional/governmental, and landscape. These classifications were used to analyze current consumption patterns among various types of customers. The City uses the same definitions for each sector as outlined in the DWR 2020 Guidebook:

- **Single-Family Residential:** A single-family dwelling unit – A lot with a free-standing building containing one dwelling unit that may include a detached secondary dwelling
- **Multi-Family:** Multiple dwelling units contained within one building or several buildings within one complex
- **Commercial:** A water user that provides or distributes a product or service
- **Industrial:** A water user that is primarily a manufacturer or processor of materials as defined by the North American Industry Classification (NAICS) code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development
- **Institutional/Governmental:** A water user dedicated to public service
- **Landscape:** Water connections supplying water solely for landscape irrigation
- **Groundwater Recharge:** Water used for groundwater replenishment, banking or storage



- **Distribution System Losses:** Distribution system water losses (also known as “real losses”) are the physical water losses from the water distribution system and the supplier’s storage facilities, up to the point of customer consumption

4.2.1 Historical Water Use

Actual water use by the City’s customers, by water use sector, in 2010 and 2015 is summarized in Table 4-1. Because the metering program was not yet complete in 2010, past water use is based on groundwater well production records. These are the same values reported in the City’s 2010 and 2015 UWMP.

Water use sectors	2010 Actual Volume	2015 Actual Volume
Single-Family	1,651	3,959
Multi-Family	1,147	1,315
Commercial	1,345	1,321
Industrial	43	596
Institutional/ Governmental	454	344
Landscape	1,088	623
Unmetered Production ^(b)	8,194	N/A
Losses	N/A	485
Other ^(c)	N/A	7
Total	13,922	8,650

(a) AFY = acre-feet per year
 (b) The City became fully metered in 2014. Therefore, water use in 2010 includes a category for unmetered production.
 (c) “Other” accounts for metered unbilled and unbilled unmetered water use in the City’s system for 2015.

4.2.2 Current Water Use

Actual potable water use by the City’s customers, by water use sector, in 2020 is summarized in Table 4-2 (DWR Table 4-1). Recycled water use will be addressed in Chapter 6. Currently there are no existing uses of saline barriers, groundwater recharge, conjunctive use, or raw water within the City’s service area.



Table 4-2. Actual Demands for Potable Water (DWR Table 4-1 Retail)

Use Type	2020 Actual		
<p>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</p>	Additional Description (as needed)	Level of Treatment When Delivered Drop down list	Volume*
Add additional rows as needed			
Single-Family		Drinking Water	4,860
Multi-Family		Drinking Water	1,381
Commercial		Drinking Water	1,647
Industrial		Drinking Water	170
Institutional/Governmental		Drinking Water	366
Landscape		Drinking Water	859
Losses	Unauthorized and Unmetered Water Losses	Drinking Water	1,070
TOTAL			10,353
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.			
NOTES: Volumes are in AF.			

4.2.3 Projected Water Use

Water demand projections for 2020 to 2025 are assumed to increase by 4 percent per year based on an observed 4 percent average demand increase from 2015 to 2020. For water demand projections beyond 2025, the projections are based on anticipated population growth rate increases from 2025 to 2045 which is calculated to be 1.09 percent per year. Given that the City is dominated by residential/commercial water use, the rate of City population growth is a good measure for assessing future water use.

The projected water use by the City’s customers is based on the best available information. The City tracked actual water use by sector in 2020 through its metering program. It is expected that the distribution of water by water user type will not change significantly in the future and, therefore, the percentage of each customer classification that existed in 2020 was assumed to remain constant through 2045.

The City does not know the estimated volume of water saved by its conservation measures so water savings resulting from conservation measures are not included in the projected water use estimates.

Table 4-3 (DWR Table 4-2) reports the projected water demands, by use type, through the year 2045.

Chapter 4 Water Use Characterization



Table 4-3. Demands for Potable Water – Projected (DWR Table 4-2 Retail)

Use Type	Additional Description (as needed)	Projected Water Use ² <i>Report To the Extent that Records are Available</i>				
		2025	2030	2035	2040	2045 (opt)
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUdata online submittal tool						
Add additional rows as needed						
Single-Family		5,913	6,242	6,590	6,957	7,345
Multi-Family		1,681	1,774	1,873	1,977	2,087
Commercial		2,003	2,115	2,233	2,357	2,488
Industrial		206	218	230	243	256
Institutional/Governmental		446	471	497	524	554
Landscape		1,045	1,104	1,165	1,230	1,298
Losses		1,302	1,374	1,451	1,532	1,617
TOTAL		12,596	13,298	14,038	14,820	15,646
¹ Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4. Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.						
NOTES: Volumes are in AF.						

Total potable water demands are summarized in Table 4-4 (DWR Table 4-3) and total recycled water demands are summarized in Table 4-5 (DWR Table 4-3).

Table 4-4. Total Potable Water Use (DWR Table 4-3 Retail)

	2020	2025	2030	2035	2040	2045 (opt)
Potable Water <i>From Tables 4-1R and 4-2 R</i>	10,353	12,596	13,298	14,038	14,820	15,646
TOTAL WATER USE	10,353	12,596	13,298	14,038	14,820	15,646
NOTES: Volumes are in AF.						



Table 4-5. Total Gross Non-Potable Water Use (DWR Table 4-3 Retail)

	2020	2025	2030	2035	2040	2045 (opt)
Recycled Water Demand ¹ <i>From Table 6-4</i>	151	602	677	677	677	
TOTAL WATER USE	151	602	677	677	677	

NOTES: Volumes are in AF.

The recycled water projections are only shown through 2040.

4.2.3.1 Characteristic Five-Year Water Use

Water Code Section 10635(b) requires urban suppliers to include a five-year DRA in their UWMP. A key component of the DRA is estimating demands for the next five years (2021-2025) without drought conditions (i.e., unconstrained demand) to account for climate change considerations. The five-year demand projections are summarized in Table 4-6, and the DRA is detailed in Chapter 7. Demand projections for 2021 through 2024 are interpolated between 2020 actual water demands and 2025 projected demands.

Table 4-6. Projected Water Demands for Drought Risk Assessment

	2021	2022	2023	2024	2025
Water Demand ^(a) , AF	11,043	11,582	12,121	12,659	13,198

(a) Demand projections were interpolated between 2020 actual water demands and 2025 projected.



4.3 DISTRIBUTION SYSTEM WATER LOSSES

System losses are the difference between the actual volume of water treated and delivered into the distribution system and the actual metered consumption. Such apparent losses are always present in a water system due to pipe leaks, unauthorized connections or use, faulty meters, unmetered services such as fire protection and training, and system and street flushing. The State has not adopted water loss standards.

The City uses the American Water Works Association (AWWA) method to annually evaluate its distribution system losses. For the 2019 calendar year, the City’s water losses were estimated to be approximately 1,521 acre-feet (AF), or approximately 16.3 percent of their demand. A copy of the City’s 2019 Water Audit worksheet is provided in Appendix E.

Table 4-7 (DWR Table 4-4) summarizes the monthly system losses for the last five years with the most recent 12-month period available. The most recent 12-month period began on January 1, 2019.

Table 4-7. 12 Month Water Loss Reporting (DWR Table 4-4 Retail)

Reporting Period Start Date (mm/yyyy)	Volume of Water Loss ^{1,2}
01/2015	485
01/2016	1,023
01/2017	976
01/2018	242
01/2019	1,521
¹ Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.	
² Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.	
NOTES: Volumes are in AF.	

4.4 WATER USE FOR LOWER INCOME HOUSEHOLDS

SB 1087 (approved on October 7, 2005) added certain provisions to the Government Code and amended a portion of the UWMP Act. As it relates to the UWMP Act, SB 1087 requires the water use projections of an UWMP to include the projected demands for single-family and multi-family residential housing needed for lower income households as identified in the housing element of any city or county in the service area of the supplier (CWC § 10631(a)). A low-income household is any household that has an income below 80 percent of the area median income, adjusted for family size.

The City is a member of Sacramento Area Council of Governments (SACOG) and participates in the Regional Housing Needs Plan (RHNP) which allocates participating cities and counties their “fair share” of the region’s projected housing needs. The RHNP is updated every five years and provides the housing units that a city or county must plan for within a 7.5-year time period. The SACOG 2013-2021 RHNP was adopted September 20, 2012. This information is used by cities and counties to update their General Plan Housing Elements. The City adopted its 2018 Housing Element Update on May 16, 2017.



Table 4-8 shows projected demands for low income housing based on estimates by the adopted RHNP.

Low Income Water Demands ^(b)	2020	2025	2030	2035	2040	2045
Single-Family Residential	1,340	1,630	1,721	1,817	1,918	2,025
Multi-Family Residential	108	132	139	147	155	164
Total	1,448	1,762	1,860	1,963	2,073	2,188

(a) Volumes are in AF.
 (b) 2013-2021 SACOG RHNP estimates 35.4 percent of Woodland's population has either Low or Very Low Income. This percentage was applied directly to the projected water demands for an estimation.

4.5 ESTIMATING FUTURE WATER SAVINGS

The water use projections presented in Table 4-3 (DWR Table 4-2) are based on City population growth. Additional water savings from codes, standards, ordinances, or transportation and land use plans, also known as passive savings, can decrease the water use for new and future customers. However, as shown in Table 4-9 (DWR Table 4-5) below, these potential passive savings have not been included in the City’s water demand projections.

Table 4-9 (DWR Table 4-5) also indicates that lower income residential demands are included in the City’s water demand projections. These demands are discussed in Section 4.4.

Table 4-9. Inclusion in Water Use Projections (DWR Table 4-5 Retail)

Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) <i>Drop down list (y/n)</i>	No
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, or otherwise are utilized in demand projections are found.	
Are Lower Income Residential Demands Included In Projections? <i>Drop down list (y/n)</i>	Yes

4.6 CLIMATE CHANGE CONSIDERATIONS

DWR and others have done studies to model potential future changes at the regional level on both streamflow and temperature. The focus has been on the Sacramento River system since it is a major source of water for much of California. These studies make it clear that more extreme hydrology (i.e., more floods and droughts) is likely to occur regardless of the “average” hydrology.

Other potential changes include less snowpack, earlier runoff from snowmelt, more precipitation as rain than snow, changes in the amount and timing of stream flows, changes in water resources system operations, and rising sea levels. In turn, these changes could have serious implications for water supply reliability, including water quality. A 2018 report titled “Indicators of Climate Change in California” by the

Chapter 4

Water Use Characterization



California Office of Environmental Health Hazard Assessment (OEHAA) indicates that over the past century, spring runoff to the Sacramento River decreased by 9 percent. This is an indication of a long-term decrease in snowpack, with earlier springtime warming. According to the 2018 Report, lower flows to the Sacramento River will also result in greater demand on groundwater resources and affect fall Chinook salmon runs.

Since the City purchases and imports surface water from WDCWA, the most tangible effect of climate change hydrology is likely to be the timing and frequency at which the State Water Resources Control Board (State Board) imposes Term 91 curtailments. These curtailments apply to WDCWA's primary water right. During Term 91 curtailment periods, no water may be diverted under this water right. WDCWA's secondary water rights are not subject to Term 91 curtailments, but are subject to Lake Shasta critical year reductions, in which the Lake Shasta designations for any given year are established by the US Bureau of Reclamation. As further discussed in Chapter 6, the possible Lake Shasta critical years and likely impossible periods of Term 91 will increase in the future due to longer periods of drought. This increase was estimated and taken into consideration when projecting surface water supply availability from the Davis Woodland Water Supply Project (DWWSP).

In Yolo Subbasin Groundwater Agency (YSGA)'s Draft 2021 GSP, the YSGA ran their surface water-groundwater model to compare the water budget of the Yolo Subbasin for historical and future scenarios. The key results for the impacts of climate change on future average land surface water budget in the Yolo Subbasin are below (GEI Consultants, 2021):

- Overall land surface mass balance is maintained (total inflows = outflows).
- The effect of increased perennial crop acreage results in more evapotranspiration and less deep percolation.
- The effect of climate change results in more evapotranspiration and more deep percolation.

Impacts of climate change on the Yolo Subbasin's groundwater budget and storage patterns from the YSGA Draft 2021 GSP are (GEI Consultants, 2021):

- Less deep percolation and more outflow than inflow is the result of increased perennial crop acreage and change in irrigation management.
- The effect of climate change can be seen in the increase in deep percolation, decreased storage in 2070 extreme dry scenario, balanced budgets in the central tendency scenarios for 2030 and 2070, and increased storage in the 2070 extreme wet scenario.
- There is not much difference in groundwater storage between the central tendency scenarios and the future baseline scenario where urban demand is increased, irrigated crops are kept constant, and climate is kept the same as the historical scenario.

Some additional potential climate change impacts to groundwater resources include:

- Decreased reliability of surface water supplies could lead to increased reliance on groundwater, further stressing such supplies
- Changes to surface water hydrology – increased winter flood flows, reduced spring and summer snowmelt runoff – could decrease groundwater recharge
- Increased landscape and irrigation water demands due to increased temperatures could further increase pressures on groundwater supplies

Chapter 4

Water Use Characterization



The implementation of WDCWA’s DWWSP in 2016, along with the Aquifer Storage and Recovery (ASR) conjunctive use program are adaptations to climate change that the City has implemented to avoid the potential adverse effects from climate change listed above on the City’s groundwater supply. By adding surface water as a primary drinking water source, the City diversified its water supply portfolio which provided flexibility to the City for adjusting to changing weather and hydrology resulting from climate change. The City’s ASR program offers flexibility for the City to use and bank surface water when it’s plentiful and use recovered ASR water when surface water is not available.

Additional details about the potential impacts of climate change, the DWWSP, and the ASR program are described in Chapter 6 *System Supplies*.



4.7 REFERENCES

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CHAPTER 5

Conservation Target Compliance

In November 2009, SB X7-7, the Water Conservation Act of 2009, was signed into law as part of a comprehensive water legislation package. The Water Conservation Act addressed both urban and agricultural water conservation. The legislation set a goal of achieving a 20 percent statewide reduction in urban per capita water use by December 31, 2020 (i.e., “20 by 2020”). To meet the urban water use target requirement, each retail supplier was required to determine its baseline water use, as well as its target water use for the year 2020. Water use is measured in gallons per capita per day (GPCD).

A discussion of the City’s programs and policies for water conservation is provided in Chapter 9 Demand Management Measures of this plan. Therefore, the remainder of this chapter will only focus on SB X7-7 baselines and targets for the City’s retail water service area.

This chapter also provides a review of the methodology the City used to calculate its 2020 Urban Water Use Target (target), its baseline, and how the baseline was calculated. The City calculated baselines and targets on an individual reporting basis in accordance with SB X7-7 legislation requirements and DWR *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* (2016) (DWR *Methodologies*).

In this Chapter, it is demonstrated that the City has achieved its 2020 target reduction. Compliance with the urban water use target requirement is verified in the SB X7-7 Verification Form, which is included as Appendix F in this plan.

5.1 OVERVIEW AND BACKGROUND

The City’s compliance with SB X7-7 was first addressed in the City’s 2010 UWMP. The City’s baseline per capita water use was determined, and urban water use targets for 2015 and 2020 were established and adopted. Actual water use data and California DOF population estimates were used to calculate GPCD water use.

SB X7-7 included a provision that an urban water supplier may update its 2020 urban water use target in its 2015 UWMP, and may use a different target method than was used in 2010. Also, the SB X7-7 methodologies developed by DWR in 2011 noted that water suppliers may revise population estimates for baseline years when the 2010 Census information became available.

The 2010 Census data was not finalized until 2012. In its 2015 UWMP, the City updated its population, baselines, and targets to reflect 2010 Census data. The City demonstrated that it successfully achieved its 2015 interim target and confirmed its 2020 target.

In this 2020 UWMP, the City verifies that it achieved its 2020 target per capita water use.



5.2 GENERAL REQUIREMENTS FOR BASELINE AND TARGETS

SB X7-7 required each urban water retailer to determine its baseline daily per capita water use over a 10-year or 15-year baseline period. The 10-year baseline period is defined as a continuous 10-year period ending no earlier than December 31, 2004 and no later than December 31, 2010. SB X7-7 also defined that for those urban water retailers that met at least 10 percent of their 2008 water demand using recycled water, the urban water retailers can extend the baseline GPCD calculation for a maximum of a continuous 15-year baseline period, ending no earlier than December 31, 2004 and no later than December 31, 2010. In 2008, the City delivered no recycled water; therefore, the City's baseline GPCD was calculated over a 10-year period. In its 2015 UWMP, the 10-year baseline period that the City selected was 1995 through 2004 (see Appendix F). This is the same 10-year baseline period reported in the City's 2010 UWMP.

SB X7-7 and DWR provided four different methods for calculation of an urban water retailer's 2020 target. Three of these methods are defined in Water Code Section 10608.20(a)(1), and the fourth method was developed by DWR. The 2020 water use target may be calculated using one of the following four methods:

- **Method 1:** 80 percent of the City's base daily per capita water use;
- **Method 2:** Per capita daily water use estimated using the sum of performance standards applied to indoor residential use; landscaped area water use; and commercial, industrial, and institutional uses;
- **Method 3:** 95 percent of the applicable State hydrologic region target as stated in the State's April 30, 2009, draft 20x2020 Water Conservation Plan; or
- **Method 4:** An approach that considers the water conservation potential from: 1) indoor residential savings, 2) metering savings, 3) commercial, industrial and institutional savings, and 4) landscape and water loss savings.

The City selected Method 1 to calculate its 2020 target in its 2015 UWMP.

Daily average water use is divided by the service area population to obtain baseline and target GPCD. In 2015, the City adjusted its baseline and target GPCD to reflect its updated population estimates based on 2010 Census data results. To calculate the City's compliance year GPCD and compare it to the 2020 target, the population is updated to reflect population estimates for 2020. Details of determining 2020 service area population are provided in Section 5.3.

The City's baselines and targets are summarized in Section 5.5. The City's 2020 compliance water use is provided in Section 5.6.

5.3 SERVICE AREA POPULATION

To correctly calculate its compliance year GPCD, the City must determine the population that it served in 2020. At the time of preparation of this UWMP, the 2020 Census results were unavailable.

The method used to estimate the service area population, using DOF data, is shown on Table 5-1 (SB X7-7 Table 2). The DOF uses U.S. Census data, combined with changes to the housing stock, estimated occupancy of housing units, and the number of persons per household to estimate annual population within jurisdictional boundaries. Because the City's current water service area is substantially the same as



the City limits, DOF population data for the City of Woodland is valid for use as the service area population. DOF estimates for the City of Woodland 2020 population are shown in Table 5-2 (SB X7-7 Table 3).

Table 5-1. Method for Population Estimates (SB X7-7 Table 2)

Method Used to Determine 2020 Population (may check more than one)	
<input checked="" type="checkbox"/>	1. Department of Finance (DOF) or American Community Survey (ACS)
<input type="checkbox"/>	2. Persons-per-Connection Method
<input type="checkbox"/>	3. DWR Population Tool
<input type="checkbox"/>	4. Other DWR recommends pre-review

Table 5-2. Service Area Population (SB X7-7 Table 3)

2020 Compliance Year Population	
2020	60,742
NOTES: Population is from the Department of Finance.	



5.4 GROSS WATER USE

Annual gross water use, as defined in CWC §10608.12 (h), is the water that enters the City’s distribution system over a 12-month period (calendar year) with certain exclusions. This section discusses the City’s annual gross water use for each year in the baseline periods, as well as 2020, in accordance with Methodology 1: Gross Water of DWR’s *Methodologies* document.

Annual gross water use for the baseline periods and 2020 are summarized in Appendix F. The baseline values reported in Appendix F are the same as documented in the City’s 2010 and 2015 UWMP. The City’s 2020 actual gross water use for Calendar Year 2020 is 10,378 AF as presented in Chapter 4 of this plan.

5.5 BASELINES AND TARGETS SUMMARY

Daily per capita water use is reported in GPCD. Annual gross water use is divided by annual service area population to calculate the annual per capita water use for each year in the baseline periods. As discussed in Section 5.1, the City updated its population data, adjusted its baseline, and confirmed its 2020 target in its 2015 UWMP. The City’s 10-year base daily per capita water use is 290 GPCD. Using Method 1 for 2020 water use target calculation as described in Section 5.2, the City’s confirmed 2020 compliance target is 232 GPCD. The City’s baseline and target are summarized in Table 5-3 (DWR Table 5-1).

Table 5-3. Baseline and Targets Summary (DWR Table 5-1 Retail)

Baseline Period	Start Year *	End Year *	Average Baseline GPCD*	Confirmed 2020 Target*
10-15 year	1995	2005	290	232
5 Year	2003	2007	277	
*All cells in this table should be populated manually from the supplier's SBX7-7 Verification Form and reported in Gallons per Capita per Day (GPCD)				

The baseline and 2020 target are included in the SB X7-7 verification form, Appendix F.

5.6 2020 COMPLIANCE DAILY PER CAPITA WATER USE

In Sections 5.3 and 5.4, the City’s 2020 population and gross water use are presented, respectively. The City calculated its actual 2020 water use for the 2020 calendar year in accordance with Methodology 1 of DWR’s *Methodologies* document. As shown in Table 5-4 (DWR Table 5-2), urban per capita water use in 2020 was 152 GPCD, which is well below the confirmed 2020 water use target of 232 GPCD. Therefore, the City has met its 2020 final water use target. The complete set of SB X7-7 verification tables used to document this compliance is included in Appendix F.



Table 5-4. 2020 Compliance (DWR Table 5-2 Retail)

2020 GPCD			2020 Confirmed Target GPCD*	Did Supplier Achieve Targeted Reduction for 2020? Y/N
Actual 2020 GPCD*	2020 TOTAL Adjustments*	Adjusted 2020 GPCD* (Adjusted if applicable)		
152	0	152	232	YES
<i>*All cells in this table should be populated manually from the supplier's SBX7-7 2020 Compliance Form and reported in Gallons per Capita per Day (GPCD)</i>				

As detailed in DWR’s *Methodologies* document, adjustments are allowed that can be made to an agency’s gross water use in 2020 for unusual weather, land use changes, or extraordinary institutional water use.

The City has elected not to make the adjustments allowed by Water Code Section 10608.24 because these exceptions are not needed to demonstrate compliance with SB X7-7 for 2020. Water use in 2020 in the City’s service area was significantly reduced as compared to baseline years as a result of increased water conservation efforts by the City and its customers.

5.7 REGIONAL ALLIANCE

The City has chosen to comply with the requirements of SB X7-7 on an individual basis. The City has elected not to participate in a regional alliance.

CHAPTER 6

System Supplies

This chapter characterizes the City's water supply portfolio. Currently available water supplies, as well as future anticipated water supplies, are described and quantified. The management of each supply in correlation with other supplies are discussed. Potential effects of climate change and regulations are also discussed. The energy intensity required to treat and distribute the City's water supply within its service area is provided.

6.1 WATER SUPPLY ANALYSIS OVERVIEW

The City currently utilizes local groundwater, surface water from the Sacramento River, ASR water, and recycled water. Projected future supplies include the same sources of water the City currently utilizes.

The City's groundwater is supplied by five local wells within the City's service area. Details of the City's groundwater supply are described further in Section 6.2.2.

The City's surface water supplies are provided by the WDCWA Davis Woodland Water Supply Project and are described in further detail in Section 6.2.1.

The City's ASR water supplies are surface water purchased from the WDCWA which is stored in an aquifer beneath the City and recovered from one of three ASR wells for distribution and use when surface water supplies are limited. The City's ASR program is described in further detail in Section 6.2.5.

The City's recycled water supply is used for non-potable applications and is described further in Section 6.2.7.

6.2 WATER SUPPLY CHARACTERIZATION

The following sections characterize the following water supply types: purchased or imported water, groundwater, surface water, ASR, wastewater and recycled water. The availability of these sources under single dry, five-year droughts, and any other water year conditions are discussed in Chapter 7.

6.2.1 Purchased or Imported Water

The City currently purchases and imports water from WDCWA. Starting mid-2016, the City began receiving treated surface water from the Sacramento River through WDCWA. Some of this treated surface water is distributed directly to customers and a portion is stored in the aquifer during low water demand months, when surface water supplies are abundant, and recovered and distributed to customers during high water demand months, when surface water supply is limited, under the City's ASR program.

WDCWA, a Joint Powers Authority formed by the cities of Davis and Woodland, owns the following major facilities that are part of the Davis Woodland Water Supply Project: 1) the Joint Intake shared with Reclamation District 2035 (RD 2035) on the west bank of the Sacramento River just north of the Interstate-5 bridge overcrossing; 2) a raw water pump station and pipeline that deliver untreated Sacramento River water to the eastern outskirts of Woodland for treatment; 3) a Regional Water Treatment Facility (RWTF) with 30 million gallons per day (MGD) (33,626 AFY) of production capacity; and 4) finished water pump station facilities and associated delivery mains serving Woodland and Davis, respectively.



The allocation of RWTF capacity among the Project Participants is 18 MGD (20,176 AFY) for Woodland, 10.2 MGD (11,433 AFY) for Davis, and 1.8 MGD (2,018 AFY) for UC Davis, which equates to a 60/34/6 percent split. Two finished water mains deliver treated water to Woodland, one to the southern portion of the City and one to the northern portion of the City, with design flows capacities of 34.3 MGD (38,446 AFY) and 15.2 MGD (17,037 AFY), respectively, for a combined delivery capacity of 49.5 MGD (55,484 AFY). So far, the most water from WDCWA that the City has used in a single day is 15.1 million gallons (MG) (46.3 AF) in August 2020.

WDCWA holds Water Right Permit 20281 (Application 30358), referred to herein as the primary water right, which entitles WDCWA to divert up to 45,000 acre-feet annually from the Sacramento River, which equates to an annual average flow rate of approximately 40 MGD. Accordingly, this water right cannot be fully utilized unless and until the RWTF is expanded. This water right is unavailable when Term 91 curtailments are in effect.

In anticipation of Term 91 curtailments, WDCWA purchased portions of water right licenses 904A and 5487A from the Conaway Preservation Group in 2010. These two rights are collectively referred to as the secondary water rights, and they are only used by WDCWA when Term 91 curtailments are in effect. The WDCWA secondary water rights entitle WDCWA to 10,000 acre-feet of Sacramento River water during the April through October period, but are reduced by 25 percent to 7,500 acre-feet during Lake Shasta critical years. No secondary water right water is available at all to WDCWA during the period of November through March, as noted above. The secondary water rights are allocated according to a 52.1/44.4/3.5 percent split among Woodland, Davis, and UC Davis, respectively.

For the previous three years, WDCWA had an annual agreement with the City of West Sacramento to acquire 2,000 AF of surface water under the West Sacramento's Central Valley Project water-service contract. This surface water was available for transfer to WDCWA during Term 91 curtailments in the November through February period. However, the available surface water was well below the total demands of the Project Participants during that period and was also not be available for any Term 91 curtailments in March.

6.2.2 Groundwater

The City maintains a series of intermediate aquifer wells, most of which are for emergency purposes only. Three of the existing wells, however, are configured to tie directly into its southern delivery main, such that the extracted water can be blended with treated surface water. A total of approximately 3.1 MGD (3,475 AFY) of firm capacity exists among the three blending wells, where the firm capacity is defined as the total well capacity for the three wells minus the capacity of largest well.

Due to lower water quality from the groundwater compared to surface water, the City has a stated goal to minimize the use of its groundwater wells for potable supply. It is also the City's policy that the blended surface water to groundwater ratio must never be lower than 3-to-1 at any point in the system due to the aesthetic differences between surface water and intermediate aquifer groundwater. Accordingly, the wells are not available at all when surface water deliveries are fully curtailed, except on an emergency basis. In addition, all three of the blending wells are tied into the southern delivery main, which further limits the amount of groundwater available for blending.



The City currently maintains five active groundwater wells (not including the three ASR wells) and six standby groundwater wells for municipal water supply. The City previously maintained an additional three municipal groundwater wells but demolished them in 2017 to ensure continued compliance with drinking water quality requirements for nitrate. Naturally-occurring salinity, boron, and selenium in groundwater also present the City with challenges in complying with wastewater discharge requirements.

The City intends to inactivate and demolish three additional standby wells in the near-term future. Whereas groundwater was the City of Woodland's only municipal water supply until 2016, the conversion to surface water as the primary water source has rendered many of the legacy wells obsolete.

The use of surface water as a primary supply source, with ASR being used to supplement direct delivery of treated surface water to customers, addresses the compliance issues associated with groundwater. Native groundwater is blended with the surface water supply on a limited basis. Groundwater is also used as an emergency supply source.

6.2.2.1 Basin Description

The City of Woodland is located in the Yolo Sub-basin (Sub-basin 5-21.67) of the Sacramento Valley Groundwater Basin as defined in the California DWR Bulletin 118 update (DWR, 2003). The DWR Bulletin 118 description of the Yolo Subbasin is provided in Appendix G and summarized in the following sections. Figure 6-1 shows the location of the City in relation to the boundaries of other local agencies overlying the groundwater basin areas. The Yolo Sub-basin is bounded by Cache Creek on the north; the Sacramento River on the east; Putah Creek on the south; and the Coast Range on the west (DWR, 2004).

Land surface elevations within the Yolo Subbasin range from approximately 0 feet above sea level along the southeastern edge to approximately 400 feet along the western edge. Except near the western edge of the basin, where land surface elevations increase with proximity to the Coast Range, the topographic relief is low. Land surface elevations within the City service area range from approximately 30 to 80 feet. The Plainfield Ridge, the topographic expression of the Dunnigan Hills anticline, is an area of slightly elevated rolling hills located approximately four miles west of Woodland. The Yolo Basin, the flood basin of the Sacramento River, is located approximately three miles east of Woodland (Figure 6-1).

The Yolo Subbasin, which includes the groundwater basin underlying the City, has documented groundwater issues, including inelastic land subsidence due to groundwater withdrawal and water quality concerns, as described above.

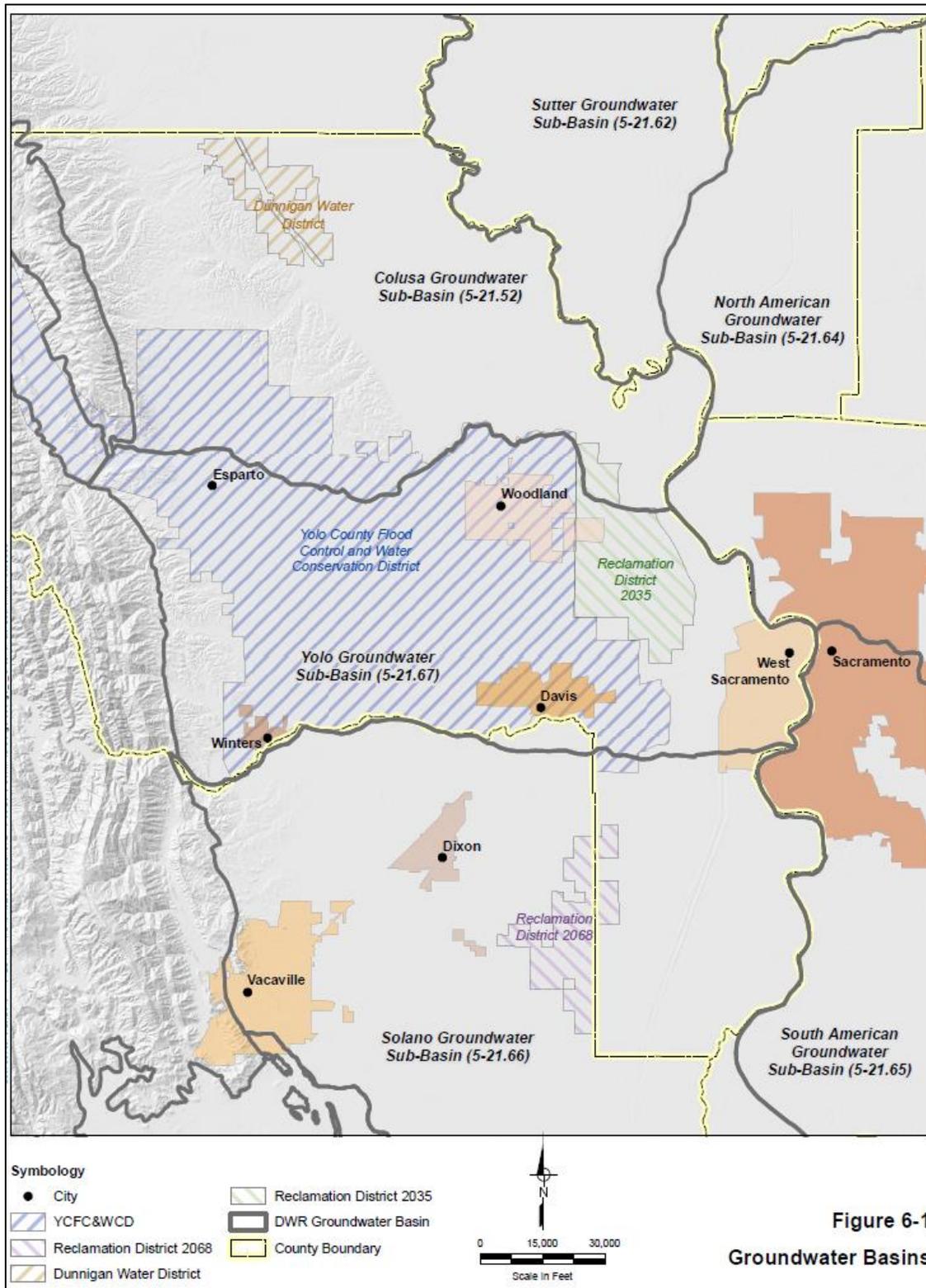
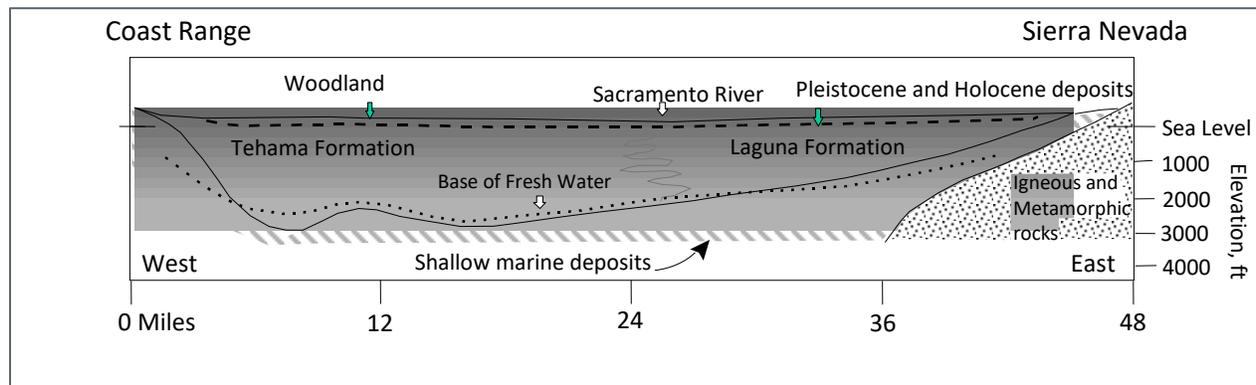


Figure 6-1
Groundwater Basins

Figure 6-1. Groundwater Basins

6.2.2.1.1 Aquifer Formations

The Sacramento Valley in the vicinity of the City of Woodland is filled by a thick sequence of marine sedimentary rock of Late Jurassic (159 million years (my) before present) to Eocene (34 my) age, unconformably overlain by a relatively thin sequence of continental sedimentary deposits of Pliocene (5 my) and younger age (Harwood and Helley, 1987). A generalized geologic cross section for the Sacramento Valley is shown in Figure 6-2.



Source: California Department of Water Resources, 1978

Figure 6-2. Generalized Sacramento Valley Geologic Cross Section

The older, deeper marine rocks contain saline water. The freshwater aquifers in the vicinity of the City occur in the overlying continental sedimentary deposits.

Shallow groundwater in the Woodland area occurs under unconfined conditions in the Holocene stream channel deposits, except where these units are overlain by Holocene Basin Deposits, creating confined conditions (DWR, 1978). At greater depths, groundwater occurs under mostly semiconfined to confined conditions in a single heterogeneous aquifer system, composed of predominantly fine-grained sediments enclosing discontinuous lenses of sand and gravel. The aquifer properties, including hydraulic conductivity, vertical leakance and degree of confinement are dependent on the properties of the fine grained units (Williamson, et. al., 1989; Bertoldi, et. al., 1991). The geologic formations comprising the freshwater aquifer are discussed from oldest to youngest in the following sections.

6.2.2.1.2 Tehama Formation

The Tehama Formation consists of up to 2,500 feet of moderately compacted silt, clay, and silty fine sand enclosing thin, discontinuous lenses of sand and gravel, silt and gravel deposited in a fluvial (river-borne) environment. The permeability of the Tehama Formation is highly variable but generally less than the overlying Quaternary alluvium. Because of the relatively large thickness, wells can yield up to several thousand gpm (DWR, 2004). The majority of irrigation and public supply wells in the Woodland area are completed in the Tehama Formation (DWR, 2004).



6.2.2.1.3 Riverbank and Modesto Formations

The Tehama Formation is overlain by the late Pleistocene age Riverbank and Modesto Formations. These formations consist of up to 200 feet of loose to moderately compacted silt, silty clay, sand and gravel deposited in alluvial depositional environments during periods of world-wide glaciation (Lettis, 1988; Weissmann, et. al., 2002; DWR, 2004). Wells penetrating the sand and gravel units of the Riverbank and Modesto Formations produce up to about 1,000 gpm (DWR, 2004). The majority of the domestic wells in the Woodland area are completed in the Riverbank and Modesto Formations (DWR, 2004).

6.2.2.1.4 Holocene Stream Channel and Basin Deposits

Holocene stream channel and basin deposits are the youngest sediments in the region, with ages of 10,000 years or less. The stream channel deposits consist of up to 80-foot sections of unconsolidated clay, silt, sand and gravel reworked from older formations by streams. Because of their low permeability, limited extent, and general poor water quality, Holocene flood basin deposits are typically not used for groundwater production (DWR, 2004).

6.2.2.2 Groundwater Management

The City adopted a Groundwater Management Plan (GMP) on March 15, 2011 (West Yost, 2011). This GMP was developed in coordination with the other local agencies with adopted plans and other basin stakeholders. Public participation was sought during the development of this plan, and the adopted version of the GMP reflects input received from members of the public. An Executive Summary of the GMP is available through the City's website: [City of Woodland](#)).

6.2.2.2.1 Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act of 2014 (SGMA) was passed in September 2014 as a three-bill legislative package composed of AB 1739 (Dickinson), SB 1168 (Pavley), and SB 1319 (Pavley). The legislation provides a framework for sustainable management of groundwater supplies by local authorities, with a limited role for state intervention when necessary to protect the resource. The legislation lays out a process and a timeline for local authorities to achieve sustainable management of groundwater basins. It also provides tools, authorities and deadlines to take the necessary steps to achieve the goal. SGMA requires the formation of locally-controlled groundwater sustainability agencies (GSAs) in the State's priority groundwater basins and subbasins. The City is part of the Yolo Subbasin GSA which was formed in June 2017.

The Yolo Subbasin GSA has certain responsibilities and authorities and is required to develop a Groundwater Sustainability Plan (GSP) by January 31, 2022. The Yolo Subbasin GSA is on-track to complete its GSA by January 2022.

The SGMA implementation steps and deadlines are shown in Table 6-1.



Table 6-1. Sustainable Groundwater Management Act Implementation Steps and Deadlines

Implementation Step	Implementation Measure	Deadlines	Status
Step One	Local agencies must form local GSAs within two years	June 30, 2017	Yolo Subbasin Groundwater Agency formed June 19, 2017
Step Two	Agencies in basins deemed high- or medium-priority must adopt GSPs within five to seven years, depending on whether a basin is in critical overdraft	January 31, 2020 for critically overdrafted basins January 31, 2022 for high- and medium-priority basins not currently in overdraft	The Yolo Subbasin GSP is planned for completion by January 1, 2022
Step Three	Once plans are in place, local agencies have 20 years to fully implement them and achieve the sustainability goal	January 31, 2040 for critically overdrafted basins January 31, 2042 for high- and medium-priority basins not currently in overdraft	TBD

SGMA applies to basins or subbasins designated by DWR as high or medium priority basins, based on a statewide ranking that uses criteria including population and extent of irrigated agriculture dependent on groundwater. The SGMA 2019 Basin Prioritization findings indicate that 94 of California's 515 groundwater basins and sub basins are high and medium priority basins. These high and medium priority basins account for 98 percent of California's annual groundwater pumping and supply 83 percent of the population which resides over the groundwater basins. The ranking for the Yolo sub-basin of the Sacramento Valley groundwater basin is shown in Table 6-2. As shown, the Yolo basin has been ranked as a high priority basin.

Table 6-2. Groundwater Basin Prioritization for Sustainable Groundwater Management Act^(a)

Basin Number	Sub-Basin Name	Overall Basin Ranking Score	Overall Basin Priority
5-21.67	Sacramento Valley/ Yolo Sub-basin	24	High

(a) SGMA Basin Prioritization Dashboard, run version May 2020.

6.2.3 Overdraft Conditions

The Yolo Sub-basin is neither adjudicated nor in overdraft. Generally, groundwater flow is from the margins of the Sacramento Valley toward the Sacramento River and then southward towards the Sacramento-San Joaquin Delta. Groundwater pumping in several areas has created cones of depression that disrupt this pattern. Historically, groundwater elevations in the region have ranged from roughly 20 feet below to 50 feet above mean sea level (msl). In the vicinity of Woodland, the base of fresh groundwater occurs at a depth of approximately 2,500 feet below msl, implying that the fresh water aquifer is about 2,500 feet thick (DWR, 1978).



Groundwater elevation measurements have been recorded in the Woodland area for over 50 years and are available through the DWR Water Data Library at <http://wdl.water.ca.gov>. The historical records show that groundwater elevations declined through the 1950s and 1970s. Groundwater elevations increased thereafter, in response to regional water supply projects implemented by Yolo County Flood Control and Water Conservation District.

Groundwater elevations have also fluctuated in response to changes in precipitation. The area experienced multiple years of below normal precipitation in 1976 through 1977, 1987 through 1991, and 2007 through 2008, and more recently in 2011 through 2016. Groundwater elevations in the fall of these drought years dropped significantly in relation to the average measurements. The maximum groundwater elevation measurements were recorded in spring 1983, the same year that the maximum annual precipitation was recorded.

Inelastic land subsidence has been documented in the Woodland area, but the impacts since at least 1999 have been limited. Based on surveys conducted by the Yolo County Subsidence Monitoring Network, approximately one inch of subsidence occurred in the City service area between 1999 and 2008, the last year a repeat land subsidence benchmark survey was performed (West Yost, 2015).

Adverse effects associated with inelastic land subsidence include reductions in groundwater aquifer storage capacity, modified surface drainage patterns, reduced flood protection, and damage to the City's facilities and other infrastructure. The City's efforts to implement the surface water supply project has substantially reduced its groundwater extractions and enhanced regional efforts to maintain sustainable groundwater yield.

6.2.3.1 Groundwater Use – Past Five Years

Groundwater pumping by the City over the last five years is summarized in Table 6-3 (DWR Table 6-1).



Table 6-3. Groundwater Pumped in Last Five Years (DWR Table 6-1 Retail)

<input type="checkbox"/>	Supplier does not pump groundwater. The supplier will not complete the table below.					
<input type="checkbox"/>	All or part of the groundwater described below is desalinated.					
Groundwater Type <i>Drop Down List</i> <i>May use each category multiple times</i>	Location or Basin Name	2016*	2017*	2018*	2019*	2020*
<i>Add additional rows as needed</i>						
Alluvial Basin	Yolo Subbasin of the Sacramento Valley Groundwater Basin	3,982	75	378	735	1,273
TOTAL		3,982	75	378	735	1,273
* <i>Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>						
NOTES: Volumes are in AF. Total groundwater volumes include water pumped from ASR wells. For each year, total groundwater volumes were composed of 0% (2016), 0% (2017), 0.03% (2018), 99.98% (2019), and 99.83% (2020) ASR well water.						

6.2.4 Surface Water

WDCWA delivers treated surface water to the City, and to two other participants (the City of Davis and the University of California, Davis) with water from the RWTF, which began full-scale operations in June 2016.

The City is currently entitled to no more than 20,160 AFY of RWTF capacity. The cities and WDCWA are evaluating options to meet future demands while providing water supply reliability and options may include expansion of the RWTF. The timing of the expansion is unknown but could provide Woodland 4 mgd or more of capacity and could occur within the UWMP planning window. For the City’s planning purposes, it is assumed that the RWTF expansion will occur in 2040 and provide 4 mgd (or approximately 24,440 AFY total) of additional surface water to the City in normal water years. The City has provided WDCWA with its water demand projections.

The two main surface water rights the City obtained are the WDCWA water right permit 20281 and a set of secondary water rights obtained from the Conaway Preservation Group. Additional information on constraints for this water supply are included in Chapter 7.

6.2.5 Aquifer Storage and Recovery

With an objective of creating a reliable water system to meet the needs to the community, the City has developed an ASR program that utilizes constructed water infrastructure along with future surface water supplies to increase reliability. ASR wells include features that allow injection of treated surface water



from the distribution system into the groundwater aquifer. This injection capability allows the City to take surface water sources that are available, treat it and then inject it into the aquifer for later use.

The primary purpose of the ASR program is to provide a supplement to the surface water supply. The appropriative water right that enables diversion of water from the Sacramento River is limited by permit Term 91. Term 91 prohibits diversions whenever “satisfaction of in basin entitlements requires releases of supplemental Project water by the Central Valley Project or the State Water Project”. The State Board provides notification of curtailments under Term 91 as far in advance of the curtailment as practicable, based on information provided to the State Board by the Central Valley Project and State Water Project operators. Whether, and to what extent, Term 91 curtailments are imposed in a given year depends on hydrologic conditions, water demands of water right holders, water demands supporting environmental needs and water quality objectives in the Delta, and other factors. The ASR program enables storage of treated surface water in the aquifer during low-demand winter months, when Term 91 is typically not imposed, and recovery of the treated surface water during high demand summer months when Term 91 is more likely to be imposed.

In 2014, the City received a permit from the Central Valley Regional Water Quality Control Board, Permit Amendment No. 01-09-19-PER-004, for testing of the ASR program. Since then, the City has constructed three ASR wells and has plans to install two additional ASR wells by 2045 depending on demands. The existing wells have a total injection rate of 3.75 MGD (4,203 AFY) and total recovery rate of 8.40 MGD (9,415 AFY). The ASR injection rates of the individual wells are 1.15 MGD (1,289 AFY) from Well #28, 1.72 MGD (1,928 AFY) from Well #29, and 0.92 MGD (1,031 AFY) from Well #30. The ASR recovery rates of the individual wells are 2.88 MGD (3,228 AFY) from Well #28, 3.60 MGD (4,035 AFY) from Well #29, and 1.90 MGD (2,130 AFY) from Well #30. With the largest unit (Well #29) out of service, the existing wells have a firm injection capacity of 2.07 MGD (2,319 AFY) and a firm extraction capacity of 4.78 MGD (5,354 AFY). For planning purposes, it is assumed that the future ASR wells would each have an injection capacity of 1,000 gpm (1,569 AFY) and an extraction capacity of 1,800 gpm (2,914 AFY).

Between March 2017 (when ASR operations started) and November 2020, Woodland’s cumulative ASR injections totaled 2.05 billion gallons (6,291 AF) (excluding volumes pumped to waste) and cumulative extractions totaled 0.58 billion gallons (1,780 AF) for a net total storage of 1.47 billion gallons (4,511 AF). Nevertheless, since Woodland’s ASR program is still relatively new, various uncertainties exist regarding the long-term reliability and functionality of the program. These concerns include migration of the stored water, comingling with native groundwater, and various water quality issues. Until these uncertainties are adequately resolved, the City does not want to rely too heavily on ASR as a water supply, especially during periods when surface water supplies are fully curtailed.

6.2.6 Stormwater

The City does not currently employ any active stormwater recovery measures and does not have plans to do so.

6.2.7 Wastewater and Recycled Water

For the purposes of this UWMP, “recycled water” is defined as municipal wastewater that has been treated and discharged from a wastewater facility for beneficial reuse. This section describes the City’s projected collection, treatment, and distribution of recycled water. The City started delivering recycled water in February 2017.



6.2.7.1 Recycled Water Coordination

The City operates its own recycled water program for customers within the City's service area. The City coordinates both internally, and externally with its recycled water customers. The Woodland Water Pollution Control Facility (WPCF) is responsible for the treatment and disposal of the City's municipal wastewater. Since 2007, the WPCF has produced tertiary treated effluent which is adequate recycled water quality for the purposes of landscape irrigation at parks and industrial uses. The quantity available is more recycled water than year-round sites currently utilize. The WPCF is owned and operated by the City. The City coordinates with departments and agencies in its recycled water planning.

6.2.7.2 Wastewater Collection, Treatment, and Disposal

The City WPCF is located east of County Road 102 and Gibson Road. The WPCF was originally built in 1988 and was expanded in 1997, in 1999, and in 2007. The 2007 project upgraded the plant to provide tertiary level treatment. The site includes the WPCF, an overflow pond, and a series of ponds to the south receiving sludge and effluent. The area to the north of the WPCF used to be occupied by other treatment ponds. In 2010 these ponds were cleaned and re-purposed for a stormwater detention basin, the new WDCWA water treatment plant, and an area used for stockpiling stabilized biosolids prior to disposal. The WPCF went through a retrofit project that was completed in December 2016 that replaced the existing aeration brushes with more energy efficient fine bubble diffusers and high-speed turbo blowers to convert the ditches to modified Ludzack-Ettinger process. The modified process required adding selector zones, baffling, and mixers. These modifications improved secondary process performance and settleability. The WPCF serves all residential, commercial, and industrial users within the City's service area with the exception of a tomato processing plant which treats and discharges tomato wastes on lands directly to the east of the WPCF site.

Operation of the WPCF must comply with treated effluent, receiving water, groundwater, and pond disposal limitations required under its existing National Pollutant Discharge Elimination System (NPDES) permit Number CA0077950. Under this permit, the plant is authorized to discharge up to 10.4 MGD (11,657 AFY) average dry weather flow to the Tule Canal. Current flows are about half of this value at 5 MGD (5,604 AFY). The permit was renewed in April of 2020, took effect in June 2020, and expires in May 2025.

The City's Department of Public Works (DPW) Wastewater Operations group manages wastewater collection and treatment for the City's service area. The City's DPW owns 204 miles of sanitary sewer piping which service approximately 16,728 lateral connections. The WPCF collection system service area covers only areas within the City from a combination of residential and non-residential sources. A summary of the volume of wastewater collected is provided in Table 6-4 (DWR Table 6-2). A summary of the volume of wastewater processed at and discharged from the WPCF is provided in Table 6-5 (DWR Table 6-3).

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Table 6-4. Wastewater Collected Within Area in 2020 (DWR Table 6-2 Retail)

<input type="checkbox"/>		There is no wastewater collection system. The supplier will not complete the table below.				
		Percentage of 2020 service area covered by wastewater collection system <i>(optional)</i>				
		Percentage of 2020 service area population covered by wastewater collection system <i>(optional)</i>				
Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? <i>Drop Down List</i>	Volume of Wastewater Collected from UWMP Service Area 2020 *	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? <i>Drop Down List</i>	Is WWTP Operation Contracted to a Third Party? <i>(optional) Drop Down List</i>
City of Woodland	Metered	4,587	City of Woodland	Water Pollution Control Facility	Yes	No
Total Wastewater Collected from Service Area in 2020:		4,587				
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3 .						
NOTES: Volumes are in AF.						



Table 6-5. Wastewater Treatment and Disposal Within Area in 2020 (DWR Table 6-3 Retail)

<input type="checkbox"/> No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.											
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number (optional) ²	Method of Disposal <i>Drop down list</i>	Does This Plant Treat Wastewater Generated Outside the Service Area? <i>Drop down list</i>	Treatment Level <i>Drop down list</i>	2020 volumes ¹				
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area	Instream Flow Permit Requirement
Water Pollution Control Facility	Tule Canal	Large, unimproved channel		River or creek outfall	No	Tertiary	4,587	3,909	151	0	0
Total							4,587	3,909	151	0	0
¹ Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. ² If the Wastewater Discharge ID Number is not available to the UWMP preparer, access the SWRCB CIWQS regulated facility website at https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=RegulatedFacility											
NOTES: Volumes are in AF.											



6.2.7.3 Recycled Water System Description

Historically the treated wastewater has had high Electrical Conductivity (EC) in the effluent, which makes it unsuitable for beneficial agricultural or other beneficial use. EC indicates the amount of dissolved salts or salinity of water. An excess EC level can impact plant growth rate. A report titled “City of Woodland Salinity Control and Minimization Workplan” (NexGen Utilities Management, May 2009) examined the sources of salinity in City wastewater and determined salinity enters the system from three major sources: groundwater supplies; self-regenerating water softeners; and consumptive use. The DWWSP has improved the quality of effluent by providing treated drinking water with a very low EC content and, thus, reducing the need for groundwater supplies and self-regenerating water softeners in the system.

The City completed a Recycled Water Opportunities Evaluation in April 2014 to evaluate potential recycled water uses, regulatory issues, approximate costs, and benefits for areas near the WPCF and along the southwest water transmission pipeline routes. The evaluation with the detailed description is provided in Appendix H. The evaluation concluded that after the completion of the RWTF, effluent from the WPCF would be a good quality source of water for irrigation and industrial uses. The recycled water should be competitive in cost with potable water for irrigation use within City limits and with groundwater or surface water for agricultural irrigation reuse east and northeast of the WPCF. The recycled water would not be cost competitive with dedicated wells for properties west of the WPCF, but would provide higher quality water for crops and plants that are sensitive to boron.

The City’s first recycled water project included an industrial user, Woodland Biomass, on the northeast side of town. The Woodland Biomass power generating plant was the City’s largest potable water user prior to converting to recycled water use. The power plant uses cooling water as part of its power generation operation. The City designed facilities needed to deliver recycled water to this customer for the cooling water process and reduce the amount of potable water used. Delivery of recycled water began in February 2017. Since March 2020, the Woodland Biomass plant has not been operational and therefore the City’s recycled water use in 2020 was significantly less than the previous three years since recycled water deliveries began. The Woodland Biomass plant is, however, expected to resume operations and resume its use of recycled water in mid-2021.

In the future, the City intends to construct Phase II of the Recycled Pipeline Project once grant funding is obtained. The Phase II project includes an installation of approximately 9,700 linear feet of 8-inch recycled water main and a 100,000-gallon steel water tank. Phase II will provide irrigation water for two parks currently under construction in the Spring Lake Specific Plan Area and existing and future landscaping along Gibson Road, Harry Lorenzo Avenue, Marston Drive and Road 25A. Phase II would also provide recycled water to a planned 350 acre Research and Technology Park.

6.2.7.4 Potential, Current, and Projected Recycled Water Uses

As stated above, the first planned recycled water project included an industrial user on the northeast side of town with the first phase delivering recycled water in 2017. Table 6-6 (DWR Table 6-4) shows the current and projected recycled water direct beneficial uses within the service area.



Table 6-6. Current and Projected Recycled Water Direct Beneficial Uses Within Service Area (DWR Table 6-4 Retail)

<input type="checkbox"/> 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 Supplier Producing (Treating) the Recycled Water:		Woodland Water Pollution Control Facility (WPCF)								
Name of Supplier Operating the Recycled Water Distribution System:		The City of Woodland								
Supplemental Water Added in 2020 (volume) <i>Include units</i>		N/A								
Source of 2020 Supplemental Water		N/A								
Beneficial Use Type <i>Insert additional rows if needed.</i>	Potential Beneficial Uses of Recycled Water (Describe)	Amount of Potential Uses of Recycled Water (Quantity) <i>Include volume units¹</i>	General Description of 2020 Uses	Level of Treatment <i>Drop down list</i>	2020 ¹	2025 ¹	2030 ¹	2035 ¹	2040 ¹	2045 ¹ (opt)
Agricultural irrigation	N/A									
Landscape irrigation (exc golf courses)	City park/landscape & commercial landscape areas		Two City parks	Tertiary	47	152	227	227	227	
Golf course irrigation	N/A									
Commercial use	N/A									
Industrial use	N/A									
Geothermal and other energy production	Energy Production		Energy Production	Tertiary	104	450	450	450	450	
Seawater intrusion barrier	N/A									
Recreational impoundment	N/A									
Wetlands or wildlife habitat	N/A									
Groundwater recharge (IPR)	N/A									
Reservoir water augmentation (IPR)	N/A									
Direct potable reuse	N/A									
Other (Description Required)	N/A									
Total:					151	602	677	677	677	
2020 Internal Reuse										
¹ Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.										
NOTES: Volumes are in AF. Beneficial Use through energy production assumes that the commercial energy production plant in the City remains active. 2025 and beyond recycled landscape irrigation water amounts assume CA State is approved for completion of the City of Woodland's current recycled water piping.										



Table 6-7 (DWR Table 6-5) shows a comparison between the recycled water use that was projected in the 2015 UWMP for 2020 and the actual water use for 2020. As noted in the previous section, since March 2020, the Woodland Biomass plant has unexpectedly been not operational and therefore the City’s recycled water use in 2020 was significantly less than the previous three years since recycled water deliveries began. In 2019, for example, the City’s recycled water use was 508 AF which is closer to what was projected in the 2015 UWMP for actual recycled water use in 2020.

Table 6-7. 2015 Recycled Water Use Projection Compared to 2020 Actual (DWR Table 6-5 Retail)

<input type="checkbox"/>	Recycled water was not used in 2015 nor projected for use in 2020. The supplier will not complete the table below. If recycled water was not used in 2020, and was not predicted to be in 2015, then check the box and do not complete the table.	
Beneficial Use Type	2015 Projection for 2020 ¹	2020 Actual Use ¹
<i>Insert additional rows as needed.</i>		
Agricultural irrigation		
Landscape irrigation (exc golf courses)		47
Golf course irrigation		
Commercial use		
Industrial use		
Geothermal and other energy production	800	104
Seawater intrusion barrier		
Recreational impoundment		
Wetlands or wildlife habitat		
Groundwater recharge (IPR)		
Reservoir water augmentation (IPR)		
Direct potable reuse		
Other (Description Required)		
Total	800	151
¹ Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.		
NOTES: Volumes are in AF.		

As discussed above, the high EC of the WPCF influent prior to the introduction of surface water to the City’s supplies made the use of recycled water unsuitable for agricultural and other beneficial uses within the City prior to June 2016. However, since surface water was integrated into the City’s water supply sources in 2016, the EC levels in the WPCF influent have decreased significantly. Therefore, the City was able to initiate a recycled water program for industrial users and City parks in 2017.

Since the 2015 UWMP, the City has retrofitted or installed new purple pipelines for recycled water use for landscape irrigation in parks as well as cooling water for industrial user Woodland Biomass.

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To encourage and support future recycled water use, the City may consider the following future policies and programs with regard to recycled water use:

- Allow new development to create “new” supplies by participation in the implementation of recycled water facilities; and,
- Provide additional staff and program-specific financial resources required to implement/manage the future recycled water use program.

On a long-term basis, the City will continue to explore recycled water use opportunities but the expected volume increase in recycled water used is difficult to predict and will depend which industrial and other customers are added to the recycled water system. The City’s currently identified actions to deliver recycled water within their service area is summarized in Table 6-8 (DWR Table 6-6).

Table 6-8. Methods to Expand Future Recycled Water Use (DWR Table 6-6 Retail)

<input type="checkbox"/>	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use *
<i>Add additional rows as needed</i>			
Industrial Customers Demand	Add industrial customer's based need/proximity to the recycled water pipeline	2021-2025	Case Dependent
Phase II of Recycled Pipeline Project	Construct 9,700 linear-feet of 8-inch recycled water main and 100,000 gallon water tank for landscape irrigation	Dependent on Funding Availability	106
Total			106
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>			
NOTES: Volumes are in AF.			

6.2.8 Desalinated Water

Because the City is not located in a coastal area, seawater desalination is not applicable to the City and is not considered a technically or economically feasible opportunity to explore. In addition, the groundwater that underlies the City is not brackish in nature and does not require desalination. As such, the City does not have any plans to incorporate desalinated or treated brackish water into its supply portfolio.

6.2.9 Water Exchanges and Transfers

In 2018, 2019, and 2020, WDCWA had an option agreement with City of West Sacramento to purchase surface water from West Sacramento at West Sacramento’s cost. In 2018, 704.5 AF was used, in 2019 the option agreement was not exercised. In 2020, WDCWA received 1,382.6 AF. The City and partners with the WDCWA continue to explore options for future water transfer and exchange opportunities to



supplement potential surface water reductions discussed in Chapter 7. For example, in early 2021, WDCWA prepared the Draft Water Supply Risk and Alternatives Evaluation report, which looked at ten long-term water supply strategies that include a variety of water exchange and transfer opportunities.

6.2.10 Future Water Projects

Future water supply project opportunities, including further development of groundwater resources and expansion of the City's ASR program are discussed below.

6.2.10.1 Continued Groundwater Use

The City plans to use groundwater as an emergency supply in the future and plans to maintain and replace groundwater wells as needed to provide a minimum emergency supply capacity in the future. The City will continue to determine which wells provide the greatest benefit based on location, water quality, age, and reliability, and will maintain a minimum number of wells in order to supplement surface water for peak and emergency demand conditions. Groundwater supply well maintenance is ongoing, and the City will continue to monitor and evaluate its wells for water quality, production, and structural and operational reliability to ensure that future demands for groundwater are capable of being met. The City's ASR program will be operated preferentially over the use of the groundwater blending wells, with the goal of zero groundwater use, if possible.

6.2.10.2 ASR Wells

As discussed in previous sections, the City has invested in development of an ASR program that utilizes constructed water infrastructure along with surface water supplies to increase reliability. ASR wells include features that allow injection of treated surface water from the distribution system into the groundwater aquifer. These wells allow the City to take surface water sources that are available, treat it, and then inject it into the aquifer for later use.

The primary purpose of the ASR program is to provide a supplement to the surface water supply.

In 2014, the City received a permit from the Central Valley Regional Water Quality Control Board for testing of the ASR program. Since then, the City has constructed three ASR wells and has plans to install two additional ASR wells by 2045 depending on demands. The first additional ASR well is expected to be operational by 2025. The second ASR well is anticipated to be built by 2045 but a specific date has not yet been determined. For the amount of ASR well injection days in a year, the City estimates 120 days for dry years and 180 days for wet years, depending on how long Term 91 is in effect during the winter, leaving approximately 185 days to 245 day for possible extraction. Assuming that the future ASR wells would each have an injection capacity of 1,000 gpm (1,569 AFY), the City would be able to inject between 1,060 AFY to 1,590 AFY of additional high-quality surface water per year, depending on the amount of days the City can inject. Assuming the future ASR wells would each have an extraction capacity of 1,800 gpm (2,914 AFY), the expected increase in extracted water supply ranges from 2,940 AFY to 3,900 AFY assuming 185 to 245 days of extraction per year. Pumping beyond the stored surface water capacity would result in diminished water quality relative to the surface water but in the worst-case scenario (if Term 91 were in effect 365 days/year during the fifth year of drought, for example), the ASR wells could be pumped 365 days of the year 1,800 gpm each, resulting in up to 5,810 AF per year of additional supply from the two new ASR wells.

Table 6-9 (DWR Table 6-7) summarizes the City's future water supply projects.



Table 6-9. Expected Future Water Supply Projects or Programs (DWR Table 6-7 Retail)

<input type="checkbox"/>	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.					
<input type="checkbox"/>	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.					
	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other suppliers?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type <i>Drop Down List</i>	Expected Increase in Water Supply to Supplier* <i>This may be a range</i>
	<i>Drop Down List (y/n)</i>	<i>If Yes, Supplier Name</i>				
<i>Add additional rows as needed</i>						
ASR Wells	No		Development of 2 ASR wells	One well by 2025 and one well by 2045	All Year Types	2,940 - 3,900
*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.						
<p>NOTES: Volumes are in AF per year.</p> <p>The City expects to inject treated surface water between 120 and 180 days per year depending on how long Term 91 is in effect during the winter, leaving 185 days to 245 day for extraction. Assuming that two future ASR wells would each have an injection capacity of 1,000 gpm, the City would be able to inject between 1,060 AF to 1,590 AF of additional high quality surface water per year. Assuming the future ASR wells have an extraction capacity of 1,800 gpm, the expected increase in extracted water supply ranges from 2,940 AF to 3,900 AF with 185 days to 245 days of extraction per year respectively. Pumping beyond the stored surface water capacity would result in diminished water quality relative to the surface water but in the worst-case scenario (if Term 91 were in effect 365 days/year during the fifth year of drought, for example), the ASR wells could be pumped 365 days of the year 1,800 gpm each, resulting in up to 5,810 AF per year of additional supply from the two new ASR wells.</p>						

6.2.11 Summary of Existing and Planned Sources of Water

Table 6-10 and Table 6-11 (DWR Table 6-8) summarize the City’s actual potable and non-potable water supplies from 2020 while Table 6-12 and Table 6-13 (DWR Table 6-9) summarize the City’s projected potable supplies for 2025 through 2045 and non-potable supplies for 2025 through 2040.

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Table 6-10. Water Supplies - Actual Potable (DWR Table 6-8 Retail)

Water Supply	Additional Detail on Water Supply	2020		
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		Actual Volume*	Water Quality Drop Down List	Total Right or Safe Yield* (optional)
Add additional rows as needed				
Groundwater (not desalinated)		2	Drinking Water	
Other	Groundwater from ASR wells	1,144	Drinking Water	
Surface water (not desalinated)		9,207	Drinking Water	
Total		10,353		0
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>				
NOTES: Volumes are in AF. Actual volumes shown indicate volumes distributed (not pumped as is shown in DWR Table 6-1).				

Table 6-11. Water Supplies – Actual Non-Potable (DWR Table 6-8 Retail)

Water Supply	Additional Detail on Water Supply	2020		
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		Actual Volume*	Water Quality Drop Down List	Total Right or Safe Yield* (optional)
Add additional rows as needed				
Recycled Water		151	Recycled Water	
Total		151		0
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>				
NOTES: Volumes are in AF.				



Table 6-12. Potable Water Supplies Projected (DWR Table 6-9 Retail)

Water Supply	Additional Detail on Water Supply	Projected Water Supply* Report To the Extent Practicable									
		2025		2030		2035		2040		2045 (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)
Add additional rows as needed											
Groundwater (not desalinated)											
Surface water (not desalinated)	City's share of RWTF capacity	20,160		20,160		20,160		24,440		24,440	
Other	ASR Well Water										
Total		20,160	0	20,160	0	20,160	0	24,440	0	24,440	0
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>											
NOTES: Volumes are in AF. No volumes are shown for groundwater or ASR well water because surface water is expected to be sufficient to meet the City's demands. In addition, estimating the volume available from ASR well water and groundwater is difficult to determine. At times where surface water is not sufficient to meet demands, ASR well water and native groundwater are planned to be used.											

Table 6-13. Non-Potable Water Supplies Projected (DWR Table 6-9 Retail)

Water Supply	Additional Detail on Water Supply	Projected Water Supply* Report To the Extent Practicable									
		2025		2030		2035		2040		2045 (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)
Add additional rows as needed											
Recycled Water		602		677		677		677			
Total		602	0	677	0	677	0	677	0		
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>											
NOTES: Volumes are in AF.											

6.2.12 Special Conditions

6.2.12.1 Climate Change Impacts

The Intergovernmental Panel on Climate Change (IPCC) was established to provide the decision makers and others interested in climate change with an objective source of information about climate change. It was set up by the World Meteorological Organization and the United Nations Environment Programme, and has served since 1988 as a clearinghouse for research and policy discussions related to climate change. The role of the IPCC is “to assess on a comprehensive, objective, open and transparent basis the latest scientific, technical and socio economic literature produced worldwide relevant to the understanding of the risk of human induced climate change, its observed and projected impacts and options for adaptation and mitigation.” Agencies of the United States government have provided major input to both research and discussion, particularly through the U.S. Geological Survey.

The IPCC has issued five major “assessments” of the status of climate change research, current levels of understanding, and potential policy implications. The Fifth Assessment Report was finalized and made available in November 2014. The historical and projected continued warming of the earth has and will continue to cause changes to our climate. Such induced climate change has implications to water supply reliability among a host of other environmental factors.



The State of California has provided major focus and funding on climate change research and impacts, with particular focus on developing both “adaptation” and “mitigation” strategies. In the context of climate change and its impacts to water resources, “adaptation” is simply the identification and development of strategies to cope with the expected impacts to water supply reliability. “Mitigation” is the identification and development of actions that will reduce the drivers for climate change; for the most part this mitigation translates into programs to reduce greenhouse gas emissions and lower the “carbon footprint” of activities associated with water supply and use.

The State’s research and continuing recommendations are readily available. The State’s Climate Action Team has noted a clear connection between water use and energy consumption, and consequently also with greenhouse gas production. The 2005 California Water Plan Update addressed climate change and water in a general way, noting the many potential interconnections as well as the potentially serious effects of ongoing climate change on water supply reliability. The 2009 Update to the California Water Plan addresses this topic in a more substantive way and includes recommendations and advice on how to incorporate climate change considerations into long term water resources planning. It also recommends specific actions in the areas of adaptation and mitigation as discussed above. The 2013 California Water Plan Update includes a financial plan for implementing the water plan strategies including a focus on integrated management. The most recent California Water Plan Update (completed in 2018) builds upon the 2013 Update with additional financial strategies, while also including recommended actions to address water challenges due to systemic and institutional issues. Collectively this State information provides the most updated information related to the potential effects of climate change on water supply reliability in California.

DWR and others have done studies to model potential future changes at the regional level on both streamflow and temperature. The focus has been on the Sacramento River system since it is a major source of water for much of California. The different models are split on whether future annual average runoff will be wetter or drier. Other studies make it clear, however, that we are likely to see more extreme hydrology: more floods and droughts, regardless of the “average” hydrology. However, these same regional models agree that the future will likely be warmer than it is today.

Other potential changes include less snowpack, earlier runoff from snowmelt, more precipitation as rain than snow, changes in the amount and timing of stream flows, changes in water resources system operations, and rising sea levels. In turn, these changes could have serious implications for water supply reliability, including water quality. A 2018 report titled “Indicators of Climate Change in California” by the California OEHA indicates that over the past century, spring runoff to the Sacramento River decreased by 9 percent. This is an indication of a long-term decrease in snowpack, with earlier springtime warming. Lower flows to the Sacramento River will also result in greater demand on groundwater resources and affect fall Chinook salmon runs.

6.2.12.1.1 Climate Change Impacts on Surface Water

The potential impacts to surface water resources within California have been discussed and included in several documents. Concerns noted in connection with the State Water Project (SWP) and Central Valley Project (CVP) include the following:

- Pumping less water south of the Delta
- Having less surplus in reservoirs that can be used during shortages
- Pumping more groundwater to augment reductions in surface water supplies
- Increased risk that insufficient water availability could interrupt SWP and CVP operations



The CalSim II simulation model developed by DWR and US Bureau of Reclamation was used to perform in-basin assessments of existing and future conditions based on varying assumptions about regulatory conditions, system operations, and hydrologic conditions. The CalSim II model uses historical hydrologic information for the Sacramento-San Joaquin Delta and tributary areas covering the period of water years 1922 through 2003.

Since the City purchases and imports surface water from WDCWA, the most tangible effect of climate change hydrology is likely to be the timing and frequency at which the State Board imposes Term 91 curtailments. These curtailments apply to WDCWA's primary water right. During Term 91 curtailment periods, no water may be diverted under this water right. WDCWA's secondary water rights are not subject to Term 91 curtailments, but are subject to Lake Shasta critical year reductions, where the Lake Shasta designations for any given year are established by the US Bureau of Reclamation.

Term 91 curtailments may be imposed on the WDCWA primary water right (and other appropriative water rights) when both of the following criteria are met:

- The Delta is in balanced water conditions
- Satisfaction of in-basin entitlements requires release of supplemental water by the CVP or the SWP

The CalSim II model output can be used to determine the timing of balanced water conditions in the Delta, and the timing and quantities of supplemental water releases. Therefore, Term 91 curtailments can be inferred from these results. It should be noted, however, that meeting both the above criteria does not necessarily mean the State Board will impose Term 91 curtailments. Accordingly, some subjective assessment is needed to determine when Term 91 curtailments would actually be imposed based on the CalSim II model output. Such assessments have been performed as part of ongoing studies for WDCWA.

Per the ongoing assessments for WDCWA, the following general conclusions have been reached:

- Term 91 curtailments are predicted to occur approximately 15 to 20 percent more frequently under Re-Initiation of Consultation on Long-Term Operations, Current Operations Scenario (ROConLTO COS) conditions as compared to DWR Baseline conditions.
- October is predicted to see the largest increase in Term 91 curtailment frequency, with October curtailments expected to occur 70 to 80 percent more often under ROConLTO COS conditions versus DWR Baseline conditions.
- Increases in the frequency of Term 91 curtailments are otherwise expected to be somewhat more common during the months of May through August under ROConLTO COS conditions versus DWR Baseline conditions.
- Term 91 curtailments during the month of November are not predicted to change significantly under ROConLTO COS conditions as compared to DWR Baseline conditions.
- While an overall increase in Term 91 curtailments is predicted during the months of December through April under ROConLTO COS conditions versus DWR Baseline conditions, such curtailments are expected to remain rare, with curtailment frequencies predicted to occur in less than 5 percent of years.



In addition, while Lake Shasta critical years follow a different pattern under ROConLTO COS conditions versus DWR Baseline conditions, the overall frequency of Lake Shasta critical years does not change between these two scenarios.

Given these general conclusions, the projected long-term average decrease in primary water right diversions due to climate change are summarized in Table 6-14 for 2020, 2030, and 2040 demand conditions. The indicated results are expressed as annual averages that are based on the reduced availability of the primary water right at the indicated frequency. For example, if the climate change scenario indicates that a curtailment would happen in 20 percent of years versus 10 percent of years under existing hydrologic conditions, the additional 10 percent is applied to the average demand for the given month. If an average demand of 1,000 AF existed for the given month, the 10 percent increase would equate to an average reduction of 100 AF in primary water right availability. All results are assumed to have a range of plus or minus 20 percent, and all results are rounded to the nearest 100 AF.

As indicated in Table 6-14, reductions in primary water right availability as a long-term annual average are expected to be on the order of 700 AF for 2020 demand conditions, increasing to around 1,000 AF for 2040 demand conditions. On a year-to-year basis, the effects of climate change are expected to be highly variable. It should be noted that these results are dominated by the projected climate impact-related changes that would occur in the May through October period, with changes during the November through April period being comparatively minor.

Demand Condition	Woodland Reductions in Primary Water Right Diversions, AF
2020	500–700
2030	600–800
2040	700–1,000

In YSGA’s Draft 2021 GSP, the YSGA ran their surface water-groundwater model to compare the water budget of the Yolo Subbasin for historical and future scenarios. Future projections in the YSGA model only capture climate change projections based on climate change model simulations centered around the mid-2030’s and mid-2070’s. Five future scenarios were incorporated where the demand is the same: urban demand is increased based on UWMP projections; the 2016/2018 irrigated crops are kept constant at 2016/2018 levels; and any change in irrigation demand is driven by the climate signal (GEI Consultants, 2021).

After running the five future scenarios in the YSGA model, the key results for the future average land surface water budget in the Yolo Subbasin are below (GEI Consultants, 2021):

- Overall land surface mass balance is maintained (total inflows = outflows).
- The effect of increased perennial crop acreage results in more evapotranspiration and less deep percolation.
- The effect of climate change results in more evapotranspiration and more deep percolation.



6.2.12.1.2 Climate Change Impacts on Groundwater

Despite the high level of attention both in California and internationally, there is very little information developed on the potential impacts of climate change on groundwater. The principal concern is rising sea level and potential salinity intrusion into coastal groundwater aquifers. While this is a concern for coastal areas of California, it is not a concern in the portion of Yolo groundwater subbasin near the City.

While not addressed specifically in IPCC reports, there are potential impacts to groundwater resources that have been discussed over the past few years. These potential impacts include the following concerns:

- Decreased reliability of surface water supplies could lead to increased reliance on groundwater, further stressing such supplies.
- Changes to surface water hydrology – increased winter flood flows, reduced spring and summer snowmelt runoff – could decrease groundwater recharge.
- Increased landscape and irrigation water demands due to increased temperatures could further increase pressures on groundwater supplies.

From the YSGA Draft 2021 GSP, referenced in the previous section, the YSGA noted that extended drought and acceleration of perennial crop acreage led to an increase of groundwater extraction. The YSGA also found implication that climate widely influenced groundwater storage levels when tracing the storage levels from 1970 to 2017. Declines in deep groundwater storage follow deep droughts and storage recovery follows the intervening wet periods. After running the YSGA model, several impacts of climate change on the Yolo Subbasin’s groundwater budget and storage patterns were found (GEI Consultants, 2021):

- Less deep percolation and more outflow than inflow is the result of increased perennial crop acreage and change in irrigation management.
- The effect of climate change can be seen in the increase in deep percolation, decreased storage in 2070 extreme dry scenario, balanced budgets in the central tendency scenarios for 2030 and 2070, and increased storage in the 2070 extreme wet scenario.
- There is not much difference in groundwater storage between the central tendency scenarios and the future baseline scenario where urban demand is increased, irrigated crops are kept constant, and climate is kept the same as the historical scenario.

The implementation of the DWWSP in 2016, along with the ASR conjunctive use program, both described in previous sections, are adaptations to climate change that the City has implemented to avoid the potential adverse effects from climate change listed above on the City’s groundwater supply. By adding surface water as a primary drinking water source, the City diversified its water supply portfolio which provided flexibility to the City for adjusting to changing weather and hydrology resulting from climate change. To further drought-proof the City’s water supply, the ASR program was implemented, offering flexibility for the City to use and bank surface water when it’s plentiful and use recovered ASR water when surface water is not available.

The City will also continue to review scientific and policy updates related to climate change as they become available through the IPCC, State, CUWA, and other climate change authorities. In addition, the City will continue to implement the components of its GMP, GSP when it’s complete, and this 2020 UWMP. The City will also continue to include adaptive management principals in its water supply and infrastructure planning. As part of the mitigation and adaptive measures, the City will consider the amount



of energy and greenhouse gases required in moving water throughout the system. The effects from increased water conservation on the amount of energy required on new facilities will be reviewed in future water supply planning to minimize energy use impacts.

6.2.12.2 Regulatory Conditions

The City currently doesn't anticipate any emerging regulatory conditions or future projects that affects characterization of future water supply availability and analysis.

6.2.12.3 Other Locally Applicable Criteria

The City is not aware of any other locally applicable criteria that warrants discussion in this UWMP.

6.3 ENERGY INTENSITY

In accordance with CWC §10631.2(a), the energy intensity to provide water service to the City's customers over a one-year period is presented in this section to the extent that the information is available. The amount of energy to pump and distribute the City's water supply within the system it owns and operates is included.

Water energy intensity is the total amount of energy, calculated on a whole-system basis, used to deliver water to the City's customers for use. Energy intensity is the total amount of energy in kilowatt hour (kWh) expended on a per acre-foot basis to take water from the City's sources to its points of delivery. Understanding the whole-system energy intensity would allow the City to make informed strategies in managing its water supplies and operating its system as follows:

- Identifying energy saving opportunities as energy consumption is often a large portion of the cost of delivering water;
- Calculating energy savings and Greenhouse Gas emissions reductions associated with water conservation programs;
- Potential opportunities for receiving energy efficiency funding for water conservation programs;
- Informing climate change mitigation strategies; and
- Benchmarking of energy use at each water acquisition and delivery step and the ability to compare energy use among similar agencies.

In Table 6-15(DWR Table O-1C) below, the energy intensity of the City's water service is calculated for 2020. The total energy intensity for the City's water service is 167 kWh/AF. Although the City delivers recycled water, there is no submeter to separate recycled water energy consumption from the wastewater plant's total electrical consumption. Therefore, the percentage of retail non-potable deliveries shown in Table 6-15 is zero.



Table 6-15. Recommended Energy Reporting - Multiple Water Delivery Products (DWR Table O-1C)

Urban Water Supplier:		City of Woodland					
Enter Start Date for Reporting Period	1/1/2020	Urban Water Supplier Operational Control					
End Date	12/31/2020						
		Water Management Process					
		<input type="checkbox"/> Is upstream embedded in the values reported?					
		Extract and Divert	Place into Storage	Conveyance	Treatment	Distribution	Total Utility
Water Volume Units	Total Volume of Water Entering Process (volume units)	1273	0	0	0	10504	N/A
AF	Retail Potable Deliveries (%)	100%	0%	0%	0%	100%	
	Retail Non-Potable Deliveries (%)	0%	0%	0%	0%	0%	
	Wholesale Potable Deliveries (%)	0%	0%	0%	0%	0%	
	Wholesale Non-Potable Deliveries (%)	0%	0%	0%	0%	0%	
	Agricultural Deliveries (%)	0%	0%	0%	0%	0%	
	Environmental Deliveries (%)	0%	0%	0%	0%	0%	
	Other (%)	0%	0%	0%	0%	0%	
	Total Percentage [must equal 100%]	100%	0%	0%	0%	100%	N/A
	Energy Consumed (kWh)	377426.66	0	0	0	1372444.69	1749871
	Energy Intensity (kWh/vol. converted to MG)	909.9	0.0	0.0	0.0	401.0	N/A
Water Delivery Type		Production Volume (volume units defined above)	Total Utility (kWh/volume)	Net Utility (kWh/volume)			
	Retail Potable Deliveries	10353	169.0	169.0			
	Retail Non-Potable Deliveries	151	0.0	0.0			
	Wholesale Potable Deliveries	0	0.0	0.0			
	Wholesale Non-Potable Deliveries	0	0.0	0.0			
	Agricultural Deliveries	0	0.0	0.0			
	Environmental Deliveries	0	0.0	0.0			
	Other	0	0.0	0.0			
	All Water Delivery Types	10504	166.6	166.6			
Quantity of Self-Generated Renewable Energy							
0 kWh							
Data Quality (Estimate, Metered Data, Combination of Estimates and Metered Data)							
Metered Data							
Data Quality Narrative:							
The percentage of retail non-potable deliveries is shown as zero in this table even though the City does deliver a small amount of non-potable recycled water. This line item is shown as zero since there is no submeter at the City's WPCF to separate recycled water energy consumption from the wastewater plant's total electrical consumption.							



6.4 REFERENCES

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CHAPTER 7

Water Service Reliability and Drought Risk Assessment

This chapter describes the long-term reliability and vulnerability of the City's water supplies through 2045. It also provides a rational basis for future decision-making related to supply management, demand management, and project development. The City's planned and implemented water management tools for increasing the reliability of water supplies are also addressed. In assessing the City's water supply reliability, a comparison of projected water supplies and projected water demand in normal, single-dry, and five consecutive dry years is provided. A Drought Risk Assessment (DRA) that enables the City to evaluate its risk under a severe drought period lasting for the next five consecutive years are included in this chapter. Other short-term reliability planning that may require immediate action, such as a short-term drought or a catastrophic supply interruption, is addressed in Chapter 8.

Where applicable, each section in this chapter addresses groundwater, surface water, ASR, and recycled water in a separate sub-section. The groundwater sub-section refers to the City's current supplies from the Yolo Sub-basin, the surface water sub-section refers to WDCWA's water rights to Sacramento River water (as described in Chapter 6), the ASR water sub-section refers to the surface water from WDCWA that the City injects in the ground for storage for later recovery and use, and the recycled water sub-section refers to the current and future recycled water produced from the City's WPCF.

7.1 WATER SERVICE RELIABILITY ASSESSMENT

The City's water supply reliability reflects its ability to meet the needs of its water customers with its various water supplies under varying conditions. Details from Chapter 4, which describes the City's water demand characteristics, and Chapter 6, which describes the City's water supply characteristics, are incorporated in this chapter to conduct the assessment. Conclusions from this assessment affect the City's water management decisions.

7.1.1 Constraints on Water Sources

The City's water supply currently consists of local groundwater, surface water from WDCWA, ASR water, and recycled water.

The types of constraints on the City's water supplies include environmental, regulatory, and water quality. The factors and constraints specific to each of the City's individual water supplies are described in Chapter 6.

This section addresses potential effects on the reliability of water supply sources through the year 2045.

Constraints on water resources for specific communities are addressed by CWC section 10631(c)(2) and section 10634, which state the following:

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 in 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.



The City has the following sources of water supply:

- Groundwater
- Treated surface water
- ASR water and
- Recycled water

The major constraints on each of these supplies are discussed in the following sections:

- Environmental constraints
- Legal constraints and
- Water quality constraints

7.1.1.1 Environmental Constraints

Environmental factors can limit the reliability of surface water supplies in the event that dry year supply reductions are necessary to maintain the health of aquatic species and the environment in general.

Given the fragile state of many of California’s ecosystems, environmental concerns inevitably arise during the water planning process. The delicacy of these systems 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. To ensure reliability of the City’s water supply, during unexpected environmental constraints that may be placed on WDCWA’s water rights, the City will use local groundwater, ASR water, or recycled water in place of surface water.

A further concern is the potential for overdraft and diminished water quality of the Yolo Sub-basin, which prompted the City to seek an alternative primary water supply (i.e., surface water). However, for the purposes of this UWMP, the concern of overdraft is considered a long-term groundwater basin issue rather than a supply inconsistency. The City’s 2011 GMP includes actions to address cooperative management of groundwater to prevent further overdraft and the new Yolo Subbasin SGMA process, of which the City is taking part, will address overdraft prevention in its GSP in 2022.

7.1.1.2 Legal Constraints

Legal issues, including place of use and water rights issues, are not expected to limit supply reliability for the City.

7.1.1.2.1 Groundwater

The Yolo Sub-basin is not an adjudicated groundwater basin, as defined by DWR. Therefore, there are no defined legal pumping rights for the City, and there are no legal constraints on groundwater pumping. In California, the State is not currently authorized by the Water Code to manage groundwater. California landowners have a correlative right to extract groundwater for beneficial use. As a municipal water supplier, the City acts on behalf of the overlying landowners, who rescind their water rights to the City when the land is annexed into the City.



The implementation of SGMA, described in Section 6.2.2 of Chapter 6, has introduced provisions whereby the state can step in to manage a groundwater basin if a local GSA does not properly implement sustainable groundwater management. While the information included in this section is current as of early 2021, conditions may change between the writing of this UWMP and the adoption of the 2020 UWMP.

7.1.1.2.2 Surface Water

Through the WDCWA, the City is purchasing treated Sacramento River water from the Davis Woodland Water Supply Project. As mentioned in Chapter 6, WDCWA holds Water Right Permit 20281 (Application 30358), its primary water right, which entitles WDCWA to divert up to 45,000 AF annually from the Sacramento River, which equates to an annual average flow rate of approximately 40 mgd. The constraints on this water supply are that the water right cannot be fully utilized unless and until the RWTF is expanded and this water right is unavailable when Term 91 curtailments are in effect. As discussed in Chapter 6, WDCWA has made the following general conclusions regarding Term 91:

- Term 91 curtailments are predicted to occur approximately 15 to 20 percent more frequently under ROConLTO COS conditions as compared to DWR Baseline conditions.
- October is predicted to see the largest increase in Term 91 curtailment frequency, with October curtailments expected to occur 70 to 80 percent more often under ROConLTO COS conditions versus DWR Baseline conditions.
- Increases in the frequency of Term 91 curtailments are otherwise expected to be somewhat more common during the months of May through August under ROConLTO COS conditions versus DWR Baseline conditions.
- Term 91 curtailments during the month of November are not predicted to change significantly under ROConLTO COS conditions as compared to DWR Baseline conditions.
- While an overall increase in Term 91 curtailments is predicted during the months of December through April under ROConLTO COS conditions versus DWR Baseline conditions, such curtailments are expected to remain rare, with curtailment frequencies predicted to occur in less than 5 percent of years.

Given these general conclusions, the reductions in primary water right availability as a long-term annual average are expected to be on the order of 700 AF for 2020 demand conditions, increasing to around 1,000 AF for 2040 demand conditions, as summarized in Chapter 6 Table 6-12.

In anticipation of Term 91 curtailments, WDCWA purchased portions of water right licenses 904A and 5487A from the Conaway Preservation Group in 2010 (collectively referred to as the secondary water rights). These secondary rights are only used by WDCWA when Term 91 curtailments are in effect. The WDCWA secondary water rights entitle WDCWA to 10,000 AF of Sacramento River water during the April through October period, but are reduced by 25 percent to 7,500 AF during Lake Shasta critical years. No secondary water right water is available at all to WDCWA during the period of November through March.

To supplement its surface water supplies when the primary and secondary water rights are insufficient, WDCWA purchases surface water from other agencies with more senior water rights. For the previous three years, WDCWA had an annual agreement with the City of West Sacramento to acquire 2,000 AF of surface water under West Sacramento's Central Valley Project water-service contract. This surface water was available for transfer to WDCWA during Term 91 curtailments in the November through February period. However, the available surface water was well below the total demands of the Project Participants during that period and was also not be available for any Term 91 curtailments in March.

Chapter 7

Water Service Reliability and Drought Risk Assessment



7.1.1.2.3 ASR Water

As described in Chapter 6, the City has developed an ASR program that increases reliability by injection of treated surface water from the distribution system into the groundwater aquifer. This injection capability allows the City to take surface water sources when they are available, treat them and then inject into the aquifer for later use. The City currently has three wells with ASR capabilities and has plans to construct two more ASR wells by 2045. No major legal issues associated with constructing additional ASR wells or utilizing stored water from the existing ASR wells are anticipated.

7.1.1.2.4 Recycled Water

As described in Chapter 6, the City plans to continue, and hopefully enhance, the use of recycled water produced at the City's WPCF. Future expansion of recycled water facilities must be pursuant to the requirements set forth in its SWRCB Order WQ 2016-0068-DDW (https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2016/wqo2016_0068_ddw.pdf). No major legal issues associated with recycled water facility expansion are anticipated.

7.1.1.3 Water Quality Constraints

The City does not anticipate water quality factors to affect the reliability of recycled water or purchased water within the planning horizon of this UWMP.

Prior to 2016, the City had relied on shallow and intermediate-depth native groundwater wells as its primary water supply throughout its history. Increasingly stringent drinking water quality and wastewater discharge regulations obligated the City to seek other supplies, which resulted in the City's participation in the DWWSP. The potential for wastewater discharge exceedances for such constituents as selenium, boron, and salinity (measured as electrical conductivity, or EC) has been largely eliminated through the addition of surface water supplies under the DWWSP. However, drinking water regulations and concerns remain a constraint on native groundwater usage. Because of this, three of the City's existing intermediate aquifer wells are configured to tie directly into the surface water transmission main that serves the southern portion of the city, such that the extracted water can be blended with treated surface water. The constituent that places the greatest constraints on the City's native groundwater supply is nitrate. Hexavalent Chromium was previously one of the City's major groundwater supply constraints until the Maximum Contaminant Level (MCL) was rescinded by court order in September 2017. Hexavalent Chromium, however, continues to be a contaminant of concern as a new MCL may be issued for the constituent in the near future. It is the City's policy that, to the extent possible, the blended surface water to groundwater ratio must never be lower than 3-to-1 at any point in the system due to the aesthetic differences between surface water and intermediate aquifer groundwater. This blending also helps minimize potential water quality problems posed by the City's wells.

7.1.1.3.1 Nitrates

The drinking water limit for nitrate [as N] is 10 mg/L. Due to a long history of agricultural operations in the immediate vicinity of Woodland, certain native groundwater supply wells have high levels of nitrate. In recent years, the City has carefully managed supplies from the higher-nitrate wells to ensure that nitrate limits are not exceeded. Since the RWTF came online in 2016, the City retired those wells for anything other than emergency or landscape irrigation purposes. The City continues to regularly monitor nitrate contamination in its water supplies.



7.1.1.3.2 Hexavalent Chromium

Several of the City’s native groundwater supply wells exhibit hexavalent chromium concentrations that periodically exceed the old drinking water MCL of 10 µg/L which was in effect from July 1, 2014 through September 2017. The City continues to regularly monitor Hexavalent Chromium contamination in its water supplies in anticipation that the state will likely establish a new MCL for Hexavalent Chromium.

7.1.2 Year Type Characterization

Water supply reliability is assessed based on the characteristics of the City’s water supplies during various water year types which are provided in this section.

7.1.2.1 Types of Years

CWC §10635(a) requires that the City’s water service reliability be assessed based on the following three water year types:

1. Normal Year – This condition represents the water supplies the City considers available during normal conditions. Although there is rarely a “normal” year in California, the normal year condition could be a single year or averaged range of years in the historical sequence that most closely represents the median or average water supply available. Because the City has seen some permanent water demand reductions in the past 5 years and the City’s supplies have changed significantly in the past 5 years, historical data prior to 2015 would not accurately represent future conditions. Therefore, the City has chosen the year 2019, the year with the median water production in the past 5 years, to represent a Normal Year for the City. This year represents the City’s typical year where all of its combined water supply sources are available to meet demands.
2. Single Dry Year – This condition represents the year with the lowest water supply availability to the City. The year 2015, which was the lowest year of water use in the City for the past 30 years, represents the Single Dry Year for the City.
3. Five-Consecutive-Year Drought – This condition represents a five-consecutive year dry period such as the lowest average water supply available to the Supplier for five years in a row since 1903. The years 2015 through 2019 represent the Five-Consecutive-Year Drought years for the City. This five-year period was the lowest consecutive five-year period of water use in the past 30 years.

The basis of the water year data is provided in Table 7-1 (DWR Table 7-1) for the City’s supply.



Table 7-1. Basis of Water Year Data (DWR Table 7-1)

Year Type	Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020	Available Supplies if Year Type Repeats																															
		<input type="checkbox"/>	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____																														
		<input checked="" type="checkbox"/>	Quantification of available supplies is provided in this table as either volume only, percent only, or both.																														
		<table border="1"> <thead> <tr> <th>Volume Available *</th> <th>% of Average Supply</th> </tr> </thead> <tbody> <tr> <td>Average Year</td> <td>2019</td> <td>9,795</td> <td>100%</td> </tr> <tr> <td>Single-Dry Year</td> <td>2015</td> <td>8,564</td> <td>82%</td> </tr> <tr> <td>Consecutive Dry Years 1st Year</td> <td>2015</td> <td>8,564</td> <td>82%</td> </tr> <tr> <td>Consecutive Dry Years 2nd Year</td> <td>2016</td> <td>9,011</td> <td>86%</td> </tr> <tr> <td>Consecutive Dry Years 3rd Year</td> <td>2017</td> <td>9,639</td> <td>92%</td> </tr> <tr> <td>Consecutive Dry Years 4th Year</td> <td>2018</td> <td>9,988</td> <td>96%</td> </tr> <tr> <td>Consecutive Dry Years 5th Year</td> <td>2019</td> <td>9,680</td> <td>93%</td> </tr> </tbody> </table>		Volume Available *	% of Average Supply	Average Year	2019	9,795	100%	Single-Dry Year	2015	8,564	82%	Consecutive Dry Years 1st Year	2015	8,564	82%	Consecutive Dry Years 2nd Year	2016	9,011	86%	Consecutive Dry Years 3rd Year	2017	9,639	92%	Consecutive Dry Years 4th Year	2018	9,988	96%	Consecutive Dry Years 5th Year	2019	9,680	93%
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Consecutive Dry Years 4th Year	2018	9,988	96%																														
Consecutive Dry Years 5th Year	2019	9,680	93%																														
<i>Supplier may use multiple versions of Table 7-1 if different water sources have different base years and</i>																																	
*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.																																	
NOTES: Volumes in AF. Volume available for average year reflects the 5-year average from 2016-2020. The actual water usage in 2019 was actually 9,680 AF but 2019 was the year with usage closest to the average.																																	

7.1.3 Water Service Reliability

In this section, the City’s Normal, Single-Dry, and Five-Consecutive-Year Drought projected supplies and demands are integrated and compared. Projected water demands are detailed in Chapter 4 and projected water supplies are detailed in Chapter 6. Under the various water year types, the total annual water supply sources available to the City are compared to the total annual projected water use from 2025 to 2045 in five-year increments. For the water supply and demand assessment, demand projections for the period of 2025 through 2040 and 2045 are taken from Tables 4-4 and 4-5 (DWR Table 4-3) in Chapter 4 of this document. The supply projections are assumed to equal the sum of the surface water and groundwater (including ASR extractions). Recycled water supplies are shown in separate tables to distinguish this non-potable water source from potable supplies.



7.1.3.1 Water Service Reliability – Normal Year

The City’s expected use of potable water supplies in Normal Years is described in detail in Chapter 6 and summarized below:

- 0 AF (year 2025-2045) of groundwater from the City’s wells in the Yolo Sub-basin; and
- 20,160 AF (year 2025) – 24,440 AF (year 2045) of surface water from WDCWA.

While available, groundwater supplies are shown as zero as the City would not expect to use groundwater in Normal Years but reserves groundwater for use in years when surface water is in short supply.

The City’s expected use of recycled water in Normal Years is described in Chapter 6 and summarized below:

- 602 AF (year 2025) – 677 AF (year 2040) of recycled water from the City’s WPCF.

The City’s Normal Year demands are described in detail in Chapter 4 and 6 and are summarized below:

- 12,807 AF (year 2025) – 15,908 AF (year 2045) of potable water demands from the City’s projected population of 64,139 (year 2025) – 79,735 (year 2045) and associated residential and CII accounts; and
- 602 AF (year 2025) – 677 AF (year 2040) of recycled water demand from various sources.

As shown in Table 7-2 and Table 7-3 (DWR Table 7-2), the City’s Normal Year supplies for both potable and non-potable water are adequate to meet projected Normal Year demands. The City’s primary potable water sources in the future will be surface water from the Sacramento River, ASR water, and local groundwater. ASR and groundwater supply will be used conjunctively with the surface water supplies to meet increased water demands primarily in the summer months. If necessary, the City plans to meet any additional demand through increased groundwater pumping (including both ASR and native groundwater), ensuring the City will maintain 100% supply reliability. In short, no potable water supply shortage is anticipated during Normal Years through 2045. Likewise, no non-potable water supply shortage is anticipated in Normal Years through 2040 as the ample supply of treated wastewater is more than enough to meet all recycled water demands.

Table 7-2. Normal Year Supply and Demand Comparison – Potable (DWR Table 7-2)

	2025	2030	2035	2040	2045 (Opt)
Supply totals (autofill from Table 6-9)	20,160	20,160	20,160	24,440	24,440
Demand totals (autofill from Table 4-3)	12,596	13,298	14,038	14,820	15,646
Difference	7,564	6,862	6,122	9,620	8,794
NOTES: Volumes are in AF.					



Table 7-3. Normal Year Supply and Demand Comparison – Non-Potable (DWR Table 7-2)

	2025	2030	2035	2040	2045 (Opt)
Supply totals (autofill from Table 6-9)	602	677	677	677	
Demand totals (autofill from Table 4-3)	602	677	677	677	
Difference	0	0	0	0	
NOTES: Volumes are in AF.					

7.1.3.2 Water Service Reliability – Single Dry Year

The City’s water supplies and demands for a Single Dry Year are assumed to be equivalent to those for a Normal Year. As described above, the City’s single dry year supply is anticipated to be 20,160 AFY from a combined surface water, native groundwater, and ASR water through 2035. The RWTF is anticipated to be expanded to full capacity and additional ASR wells constructed once the RWTF is expanded in 2040 which increases the anticipated single dry year supply to 24,440 AFY for 2040 and 2045.

As shown in Table 7-4 and Table 7-5 (DWR Table 7-3), the City’s Single Dry Year supplies are adequate to meet projected Single Dry Year demands. If necessary, the City plans to meet any additional potable demand through increased groundwater pumping (including both ASR and native groundwater), ensuring that the City will maintain 100 percent supply reliability. Additionally, if there is any disruption in surface water supply, the City will increase groundwater pumping to compensate.

No non-potable water supply shortage is anticipated in Normal Years through 2040 as the ample supply of treated wastewater will be more than enough to meet all recycled water demands.

Table 7-4. Single Dry Year Supply and Demand Comparison – Potable (DWR Table 7-3)

	2025	2030	2035	2040	2045 (Opt)
Supply totals*	20,160	20,160	20,160	24,440	24,440
Demand totals*	12,596	13,298	14,038	14,820	15,646
Difference	7,564	6,862	6,122	9,620	8,794
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>					
NOTES: Volumes are in AF.					



Table 7-5. Single Dry Year Supply and Demand Comparison – Non-Potable (DWR Table 7-3)

	2025	2030	2035	2040	2045 (Opt)
Supply totals*	602	677	677	677	
Demand totals*	602	677	677	677	
Difference	0	0	0	0	
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>					
NOTES: Volumes are in AF.					

7.1.3.3 Water Service Reliability – Five Consecutive Dry Years

The City’s water supplies and demands for five consecutive dry years are assumed to be equivalent to those for a Normal Year and Single Dry Year. To be conservative, the City has assumed that demands would remain constant between normal, single dry, and a five consecutive dry year period. It is likely that by the third, fourth, and fifth year of an extended dry period, customers would ramp up conservation activities and effectively reduce the demands below normal year conditions. The City’s five consecutive dry year potable supply is anticipated to be 20,160 AFY from combined surface water, native groundwater, and ASR water through 2035. The RWTF is anticipated to be expanded to full capacity and additional ASR wells constructed once the RWTF is expanded in 2040 which increases the anticipated multiple dry year supply to 24,440 AFY for 2040 and 2045.

As shown in Table 7-6 and Table 7-7 (DWR Table 7-4), the City’s five consecutive dry year supplies are adequate to meet projected five consecutive dry year demands. If necessary, the City plans to meet any additional potable demand through increased groundwater pumping (including both ASR and native groundwater) and water conservation, ensuring that the City will maintain 100% supply reliability. Additionally, if there is any disruption in surface water supply, the City will increase groundwater pumping to compensate. In this scenario, potable supplies will remain reliable but water quality consistency will suffer as water from the City’s native groundwater wells is much less palatable than the surface water. However, this aesthetic water quality issue is considered acceptable in an extreme scenario such as a 5-year drought.

Chapter 7
Water Service Reliability and Drought Risk Assessment



Table 7-6. Five Consecutive Dry Years Supply and Demand Comparison – Potable (DWR Table 7-4)

		2025*	2030*	2035*	2040*	2045* (Opt)
First year	Supply totals	20,160	20,160	20,160	24,440	24,440
	Demand totals	12,596	13,298	14,038	14,820	15,646
	Difference	7,564	6,862	6,122	9,620	8,794
Second year	Supply totals	20,160	20,160	20,160	24,440	24,440
	Demand totals	12,596	13,298	14,038	14,820	15,646
	Difference	7,564	6,862	6,122	9,620	8,794
Third year	Supply totals	20,160	20,160	20,160	24,440	24,440
	Demand totals	12,596	13,298	14,038	14,820	15,646
	Difference	7,564	6,862	6,122	9,620	8,794
Fourth year	Supply totals	20,160	20,160	20,160	24,440	24,440
	Demand totals	12,596	13,298	14,038	14,820	15,646
	Difference	7,564	6,862	6,122	9,620	8,794
Fifth year	Supply totals	20,160	20,160	20,160	24,440	24,440
	Demand totals	12,596	13,298	14,038	14,820	15,646
	Difference	7,564	6,862	6,122	9,620	8,794
*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.						
NOTES: Volumes are in AF.						



Table 7-7. Five Consecutive Dry Years Supply and Demand Comparison – Non-Potable (DWR Table 7-4)

		2025*	2030*	2035*	2040*	2045* (Opt)
First year	Supply totals	602	677	677	677	
	Demand totals	602	677	677	677	
	Difference	0	0	0	0	
Second year	Supply totals	602	677	677	677	
	Demand totals	602	677	677	677	
	Difference	0	0	0	0	
Third year	Supply totals	602	677	677	677	
	Demand totals	602	677	677	677	
	Difference	0	0	0	0	
Fourth year	Supply totals	602	677	677	677	
	Demand totals	602	677	677	677	
	Difference	0	0	0	0	
Fifth year	Supply totals	602	677	677	677	
	Demand totals	602	677	677	677	
	Difference	0	0	0	0	
*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.						
NOTES: Volumes are in AF.						

Based on an analysis presented in the WDCWA 2020 Water Supply Risk and Alternatives Evaluation report, Woodland’s existing and planned ASR capacity appears to be adequate to address average annual, maximum annual, and maximum month surface water shortfalls for all future demand scenarios analyzed in the report (2020, 2030, 2040). For peak day surface water shortfall conditions (expected to occur in November), the program would address between 84 and 98 percent of shortfalls, depending on the demand scenario. It should be noted that the peak day surface water shortfall condition represents a scenario that is both rare and somewhat conjectural (i.e., a brief high-temperature period in early November during a Term 91 curtailment). Even in these rare peak day surface water shortfall conditions, the City would be able to meet demands with native groundwater. The ability of the City to supply



demands is not anticipated to be a problem. The more significant concern is the change in water quality with switching to a higher percentage of groundwater. However, for such a rare peak condition, the aesthetic water quality change is considered to be acceptable.

If necessary, the City may also initiate a water shortage emergency stage to extend available water supplies, as described in Chapter 8.

7.2 DROUGHT RISK ASSESSMENT

CWC §10635(b) requires that the City prepare a DRA which evaluates the risk of a severe drought occurring for the next five consecutive years (2021-2025). Supply conditions for the DRA are based on the five driest consecutive years on record, with adjustments to consider plausible changes in climate, regulations, and other locally applicable criteria. This analysis requires the City to consider management of its water supplies in relation to variations in customer water use. It also provides the City the opportunity to use its WSCP response actions described in Chapter 8 and understand the degree of response necessary in managing its water supplies. This evaluation may help identify risks and assist in planning for steps to address them.

This section reviews the data and methods used to define the DRA water shortage condition and evaluates each water source's reliability under the proposed drought condition. Finally, total water supplies during the five-year drought are compared to projected demands, accounting for any applicable supply augmentation or demand reduction measures available to the City.

7.2.1 Data, Methods, and Basis for Water Shortage Condition

The water shortage condition for the DRA is the same as the five-year drought described in Section 7.1.3.3. Since the DRA can be updated outside of the UWMP five-year plan cycle, the narrative description of the data and basis for the water shortage condition is repeated in this section.

To estimate supplies during a five-year drought, it was assumed that 2015 was the first year of a five-year drought. While surface water supplies could be cut back in dry years, it was assumed that groundwater supplies would not be reduced in dry years. Based on the operational yield estimates for the Yolo Subbasin, it was assumed that groundwater supplies could provide up to 12,596 AFY, the projected demand in 2025, throughout a five-year drought if necessary to supplement surface water supplies that may be unavailable.



7.2.2 DRA Water Source Reliability

The City’s multiple dry year potable supplies include:

- Projected base purchased surface water supplies from WDCWA (with no reduction from normal year WDCWA supplies during the first dry year but a 10 percent reduction in each successive dry year); and
- Groundwater pumping (including ASR and from the City’s local groundwater basins).

Table 7-8 summarizes the available supplies for each year of the DRA.

Supply Source	Available Supply, AFY				
	2021	2022	2023	2024	2025
WDCWA ^(a)	20,160	18,144	16,128	14,112	12,096
Groundwater (ASR and Native Groundwater)	12,596	12,596	12,596	12,596	12,596
Total	32,756	30,740	28,724	26,708	24,692
(a) Projected supplies from WDCWA are reduced 10 percent from normal in the second dry year and an additional 10 percent in subsequent dry years. (b) Based on operational yield estimates for the Yolo Subbasin it is assumed the groundwater supply will not be reduced in dry years.					

7.2.3 Total Water Supply and Use Comparison

As shown in Table 7-9 and Table 7-10 (DWR Table 7-5), during a five-year drought beginning in 2021, the City’s supplies are adequate to meet both potable and non-potable projected demands through 2025, even without water conservation. For the total non-potable supplies, all available WPCF effluent is considered recycled water supply.

Chapter 7
Water Service Reliability and Drought Risk Assessment



**Table 7-9. Five-Year Drought Risk Assessment Potable Table to Address Water Code Section 10635(b)
(DWR Table 7-5)**

2021	Total
Total Water Use - Potable	12,596
Total Supplies - Potable	32,756
Surplus/Shortfall w/o WSCP Action	20,160
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	20,160
Resulting % Use Reduction from WSCP action	0%
2022	
Total	Total
Total Water Use [Use Worksheet]	12,596
Total Supplies [Supply Worksheet]	30,740
Surplus/Shortfall w/o WSCP Action	18,144
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	18,144
Resulting % Use Reduction from WSCP action	0%
2023	
Total	Total
Total Water Use [Use Worksheet]	12,596
Total Supplies [Supply Worksheet]	28,724
Surplus/Shortfall w/o WSCP Action	16,128
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	16,128
Resulting % Use Reduction from WSCP action	0%
2024	
Total	Total
Total Water Use [Use Worksheet]	12,596
Total Supplies [Supply Worksheet]	26,708
Surplus/Shortfall w/o WSCP Action	14,112
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	
Resulting % Use Reduction from WSCP action	0%
2025	
Total	Total
Total Water Use [Use Worksheet]	12,596
Total Supplies [Supply Worksheet]	24,692
Surplus/Shortfall w/o WSCP Action	12,096
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	12,096
Resulting % Use Reduction from WSCP action	0%

Chapter 7
Water Service Reliability and Drought Risk Assessment



Table 7-10. Five-Year Drought Risk Assessment Non-Potable Table to Address Water Code Section 10635(b) (DWR Table 7-5)

2021	Total
Total Water Use - Non-potable	602
Total Supplies	3,909
Surplus/Shortfall w/o WSCP Action	3,307
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	3,307
Resulting % Use Reduction from WSCP action	0%
2022	
Total	
Total Water Use [Use Worksheet]	602
Total Supplies [Supply Worksheet]	3,909
Surplus/Shortfall w/o WSCP Action	3,307
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	3,307
Resulting % Use Reduction from WSCP action	0%
2023	
Total	
Total Water Use [Use Worksheet]	602
Total Supplies [Supply Worksheet]	3,909
Surplus/Shortfall w/o WSCP Action	3,307
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	3,307
Resulting % Use Reduction from WSCP action	0%
2024	
Total	
Total Water Use [Use Worksheet]	602
Total Supplies [Supply Worksheet]	3,909
Surplus/Shortfall w/o WSCP Action	3,307
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	3,307
Resulting % Use Reduction from WSCP action	0%
2025	
Total	
Total Water Use [Use Worksheet]	602
Total Supplies [Supply Worksheet]	3,909
Surplus/Shortfall w/o WSCP Action	3,307
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	3,307
Resulting % Use Reduction from WSCP action	0%



7.3 REGIONAL SUPPLY RELIABILITY

Requirements for water supply and demand assessment are addressed in CWC section 10620(f), which states the following:

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 City is both currently implementing and has plans to implement a variety of water management tools/activities to reduce reliance on imported water. These include extensive demand management measures (documented in Chapter 9 of this report), increased use of recycled water (documented in Section 6.2.7 of this report), and possible conversion of some existing shallow/intermediate aquifer supply wells to dedicated landscape irrigation use.

CHAPTER 8

Water Shortage Contingency Plan

This chapter describes the City’s WSCP, seismic risk to the City facilities, and WSCP adoption procedures. The WSCP establishes actions and procedures for managing water supply and water demand during water shortages. The WSCP’s purpose is to minimize non-essential uses of water and conserve remaining supplies for the benefit of the public.

8.1 WATER SHORTAGE CONTINGENCY PLANNING BACKGROUND

A water shortage may occur due to a number of reasons, such as population growth, climate change, drought, and catastrophic events. Drought, regulatory action constraints, and natural and manmade disasters may occur at any time. A water shortage means that the water supply available is insufficient to meet the normally expected customer water use at a given point in time. A WSCP presents how an urban water supplier plans to act in response to an actual water shortage condition and helps prevent catastrophic service disruptions.

In 2018, the California State Legislature enacted two policy bills, (SB 606 (Hertzberg) and AB 1668 (Friedman)) (2018 Water Conservation Legislation), to establish a new foundation for long-term improvements in water conservation and drought planning to adapt to climate change and the resulting longer and more intense droughts in California. The 2018 Water Conservation Legislation set new requirements for water shortage contingency planning. The City’s WSCP has been updated to be consistent with these requirements.

8.2 CITY WATER SHORTAGE CONTINGENCY PLAN

The City’s WSCP is included in this UWMP as Appendix I. The WSCP describes the City’s strategic plan in preparation for and responses to water shortages. The WSCP includes water shortage stages and associated shortage response actions that will be implemented in the event of a water supply shortage. As part of the WSCP, the City’s legal authorities, communication protocols, compliance and enforcement, and monitoring and reporting are included. Woodland Municipal Code (WMC) Chapter 13.16 Water Service and Chapter 13.32 Water Conservation supports the City’s WSCP actions.

The City intends for its WSCP to be dynamic so that it may assess response action effectiveness and adapt to foreseeable and unforeseeable events. It may also be updated to conform to State legislative and regulatory requirements. The City’s WSCP is included as Appendix I so that it may be updated outside of the UWMP preparation process.

When an update to the WSCP is proposed, the revised WSCP will undergo the process described in Section 8.4.

8.3 SEISMIC RISK ASSESSMENT AND MITIGATION PLAN

CWC §10632.5(a) requires that the UWMP include a seismic risk assessment and mitigation plan to assess and mitigate the vulnerability of the City’s water system. Local or Multi-Jurisdictional Hazard Mitigation Plans (HMPs) may be incorporated in this UWMP to address this requirement if it addresses seismic risk. The *Yolo Operational Area Multi-Jurisdictional HMP* (Yolo HMP, updated in December 2018), addressed seismic risk and is found here: <https://www.yolocounty.org/home/showpublisheddocument/55805/636796131647430000>.

Chapter 8

Water Shortage Contingency Plan



In accordance with America’s Water Infrastructure Act (AWIA), the City completed a Risk and Resilience Assessment (RRA) of its water system in December 2020. The RRA systematically evaluated the City’s assets, threats, and risks, and evaluated countermeasures that might be implemented to minimize overall risk to the system. Vulnerability to natural hazards, including earthquakes, was assessed based on the City’s level of preparation/resilience, active response capability, and ability to recover. The Environmental Protection Agency (EPA) provides guidance on countermeasures for retrofitting tanks. It recommends anchoring tanks to foundations, strengthening tank walls, replacing non-flexible pipe connections, and improving roof structures over large reservoirs. Automatic shutoff valves at tanks are also suggested.

To ensure the security of the City’s water system, the RRA is retained by the City as a confidential document.

8.4 WATER SHORTAGE CONTINGENCY PLAN ADOPTION, SUBMITTAL, AND AVAILABILITY

The City’s WSCP (Appendix I) is adopted concurrently with the City’s 2020 UWMP, by separate resolution. Prior to adoption, a duly noticed public hearing was conducted. A hard copy of the WSCP will be submitted to DWR within 30 days of adoption, along with an electronic copy.

No later than 60 days after submittal to DWR, a copy of this WSCP will be available at the City’s offices. A copy will also be provided to Yolo County. An electronic copy of the WSCP will also be available for public review and download on the City’s website.

The City’s WSCP is an adaptive management plan. It is subject to refinements as needed to ensure that the City’s shortage response actions and mitigation strategies are effective and produce the desired results. When a revised WSCP is proposed, the revised WSCP will undergo the process described in this section for adoption by City Council and distribution to Yolo County, the City’s customers, and the general public.



8.5 REFERENCES

Yolo County Office of Emergency Services (Yolo County OES). Yolo Operational Area Multi-Jurisdictional *Hazard Mitigation Plan*. December 2018.

CHAPTER 9

Demand Management Measures

This chapter describes the City’s historical and existing water conservation program, status of implementation of Demand Management Measures (DMMs), and projected future conservation implementation. The CWC requires that UWMPs include a comprehensive description of historical, current, and projected water conservation programs.

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 narrative shall describe the water demand management measure that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.

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

(i) Water waste prevention ordinances.

(ii) Metering.

(iii) Conservation pricing.

(iv) Public education and outreach.

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

(vi) Water conservation program coordination and staffing support.

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

In previous UWMPs, a substantial amount of data was required to document a water supplier’s progress in implementing 14 specific DMMs. In 2014, Assembly Bill 2067 simplified, clarified, and updated reporting requirements for DMMs. Starting with the 2015 UWMP, focus has turned away from detailed descriptions of each of the 14 DMMs and has turned to key water conservation measures that are being implemented to achieve compliance with SB X7-7. For retail agencies, the number of DMMs has been reduced from 14 to six (plus an “other” category).

9.1 DEMAND MANAGEMENT MEASURES

The six DMMs required to be discussed in the 2015 and 2020 UWMPs includes the following:

- Water Waste Prevention Ordinances
- Metering
- Conservation Pricing
- Public Education and Outreach
- Programs to Assess and Manage Distribution System Real Loss
- Water Conservation Program Coordination and Staffing Support



For each DMM, the current program is described, followed by a description of how the DMM was implemented and the planned implementation to achieve the water use targets required by SB X7-7 (see Chapter 5 SB X7-7 Baselines and Targets).

9.1.1 Water Waste Prevention Ordinances

The City established a “No-Waste” ordinance in 1991. This ordinance was amended in 2014 with the City’s adoption of Ordinance No. 1564, as shown in Appendix J (Woodland Municipal Code 13.16 and 13.32), to ensure compliance with all federal, state, and local requirements, including but not limited to, SB X7-7 and Model Water Efficient Landscape Ordinance (MWELO) (23 CCR §§ 490 et seq.). The City’s ordinance was incorporated into the City’s Municipal Code Section 13.16.100-150 and Section 13.32.

Primary changes to the “No-Waste” ordinance included establishing water shortage stages and defining terms like “conservation,” “drought-tolerant,” and “water waste”. Water waste, which includes excessive leaks, watering impervious surfaces, irrigating during rainfall, and watering excessively to the point of runoff, is prohibited at all times. Water use becomes more restricted as water supply decreases, as demonstrated in Chapter 8. Enforcement for this ordinance is detailed in the WSCP (Appendix I).

The City will continue to revise the ordinance as needed to incorporate new federal, state, and local laws regarding water conservation and to adapt to changing water supply and demand needs. In addition, the City will be adopting an updated Water Shortage Contingency Plan concurrent with this UWMP to plan for dealing with water shortages.

For leaks on customer’s property, the City has provided leak detection assistance by alerting the top 20 continuous water users each month of potential leaks. A report is generated using the City’s automated meter reading database and then checked by staff. Letters are sent to the addresses notifying the account holders of high, continuous use. Also included is a chart with the account’s meter reads, a leak detection brochure, and a leak adjustment form. The leak adjustment form incentivizes the customer to fix leaks by informing the customer that the City will back pay the customer once the leak is repaired. The back pay covers the cost of the water lost due to the leak for up to three months before the repair. As additional support to customers with large leaks, Water Conservation and Finance staff often assist customers to find and fix common leaks on the phone.

In addition, the City has enacted requirements in the City Code to require energy efficient water heaters, which indirectly help save water, and updated water-efficient water fixtures when bathroom or kitchen remodels occur. The City has enacted the state's MWELO to reduce water consumption of landscapes while also enhancing aesthetic appearances and protecting the public by minimizing visual pollution and soil erosion.

As stated in the City’s Municipal Code Section 13.16.100 (Appendix J), the City may respond to violations first by notice to abate or an administrative citation. The City currently has one code enforcement officer whose responsibilities include addressing water use violations. These violations are found through analysis of water meter data, visible violations, and reported violations from the public, which are then investigated. If the water user is found to be in violation, the violator is given a written warning along with appropriate water conservation information.

The City resolves most of its water use violations at this warning stage; however, if the violation persists the City can impose the following fines per WMC Section 13.16.120: (i) one hundred dollars for a first



violation, (ii) two hundred dollars for a second violation of the same provision within one year, and (iii) five hundred dollars for each additional violation of the same provision within one year. If the violation is not abated within the time prescribed by the City, the City may take any or all of the following additional enforcement actions:

- Installing a flow-restriction device or other water conservation device at such person's premises at that person's expense;
- Requiring a commercial, industrial, or institutional user who does not currently have a separate landscape meter to install a landscape meter at the sole cost and expense of the user;
- Recording the violations on the property title provided the water customer is the property owner;
- Placing liens on the property to recover any costs incurred by the City provided the water customer is the property owner; and/or
- Issuing a criminal citation charged as either an infraction or misdemeanor.

Implementation of this DMM has helped, and is expected to continue to help, the City achieve its water use targets by minimizing the nonessential uses of water so that water is available to be used for human consumption, sanitation, and fire protection.

9.1.2 Metering

Water meter installations were complete for single family residential and commercial customers in 2012 and multi-family and park customers in 2014. The water meters are all connected to Advanced Metering Infrastructure which remotely reads the water meters and collects real-time water use data. Meter installations have made it possible for the City to charge customers based on their volumetric water use and provide customers with more accurate water use information, both of which will help the City achieve its water use targets. The City began offering a web-based water account portal called AquaHawk through American Conservation and Billing Solutions for water utility customers in 2016. This service allows residential and commercial customers to view their real-time water use, see historical use, compare use to similar users, view projected bills, set water budgets, and get alerts when a potential leak is detected. The City is now able to generate a variety of customizable reports. Per capita use declined significantly between 2008 and 2013, in part due to the installation of water meters and the associated implementation of usage-based fees, which is described in the following section.

Implementation of this DMM has helped, and is expected to continue to help, the City achieve its water use targets by providing accurate water use information to the customers and the City.

9.1.3 Conservation Pricing

The City adopted a consumption-based rate structure in 2010, along with the implementation of water meters for all customers. All accounts were metered by the end of 2014. The rate structure, which was originally tiered into three residential categories and one non-residential category, is always in place and is not dependent upon water shortage for implementation. As of the recent rate update in 2021, there are now only two residential category tiers instead of three. Approximately 50 percent of the revenue generated from the tiered rate structure is received from the fixed monthly rate, which is based on the meter size.

Chapter 9 Demand Management Measures



The remaining revenue is generated from monthly consumption.

The current water rate structure is provided in Table 9-1. If water is used in excess, as described in the earlier water waste prevention section, the City can impose fines.

	April 2017	January 2018	January 2019	January 2020	January 2021
Base Rate Meter Size^(a)					
2-inch or smaller	\$44.85	\$47.30	\$49.95	\$52.70	\$55.65
3-inch	\$84.25	\$88.90	\$93.80	\$99.00	\$99.00
4-inch	\$140.40	\$148.10	\$156.40	\$165.00	\$165.00
6-inch	\$280.35	\$295.70	\$312.20	\$329.40	\$329.40
Residential Consumption					
1 CF = 7.48 gallons	Each CF	Each CF	Each CF	Each CF	Each CF
0-1,200 CF ^(b)	\$0.0320	\$0.0338	\$0.0357	\$0.0377	\$0.0398
1,201-3,600 CF	\$0.0385	\$0.0407	\$0.0430	\$0.0454	\$0.0479
Above 3,600 CF	\$0.0474	\$0.0500	\$0.0528	\$0.0558	\$0.0589
Non-Residential Consumption					
1 CF = 7.48 gallons	Each CF	Each CF	Each CF	Each CF	Each CF
Multi-family, Commercial, Institutional, Industrial	\$0.0431	\$0.0440	\$0.0465	\$0.0491	\$0.0518
Landscape	\$0.0471	\$0.0497	\$0.0525	\$0.0555	\$0.0586
<i>Source: https://www.cityofwoodland.org/DocumentCenter/View/1581/2017-Water-Rate-Study-PDF</i>					
(a) Most residential properties have a 2-inch meter or smaller.					
(b) CF = cubic feet					

The City conducted a water rate study in 2016, which focused on reevaluating the tiered pricing structure and the impacts of extended drought and set water rates through 2021. The City is anticipating conducting a new 5-year rate study in 2021.

Implementation of tiered consumption charges helped the City achieve its water use targets by ensuring water customers pay the true cost of water and adequately fund water system operations and maintenance, including repair and replacement programs, and water conservation programs. Tiered consumption charges also help the City achieve its water use targets by providing an incentive for customers to reduce their water consumption.



9.1.4 Public Education and Outreach

The City regularly interacts with the public through its website (www.cityofwoodland.org/waterconservation), social media (Facebook, Twitter, and Instagram at EnviroWoodland), customer phone calls and emails, radio ads, press releases, print ads, utility bill inserts, community events, City-hosted water conservation workshops and events, monthly e-newsletters, school presentations, leak detection notices, distribution of informational material, and giveaways and rebates. All of the City's public education and outreach services are offered free of charge to City water customers.

9.1.4.1 Rebates

The City started offering water conservation rebates in 2003 with a grant-funded high efficiency toilet rebate program. Since then, the program has grown to an annual, City-funded program that includes both residential and commercial water customers. The City has offered, and continues to offer, the following rebates: \$150 for a Weather-Based Irrigation Controller, \$100 for mulch, and \$75 for rain barrels (up to two per house). The City also actively promotes water conservation rebates that the State has available.

From 2016 to 2020, the City provided 615 water conservation rebates to Woodland residents. This number of rebates amounts to an estimated water savings of approximately 8.5 million gallons with a total cost of \$58,839 to the City.

9.1.4.2 Communicating Water Use via Water Bills

When the City switched to consumption-based billing for water beginning in 2010 for metered customers, the format for the utility bill was also changed. Customers can now see their base meter charge as well as their consumption base charge, how many CF and gallons they used in the billing cycle, and a graph showing their usage for the past 13 months. This information allows customers to compare their usage with the same month of the previous year and gives them clear information about their water use. Also, beginning in 2010, a paragraph was added to all customer water bills about water conservation, including the City's conservation target and contact information for the City's Water Conservation Program.

The City often distributes important water conservation messages to its customers through bill insert flyers and newsletters. For example, when the City enacted the Stage Two Water Warning in May 2015, all City of Woodland water customers received a flyer explaining the emergency water conservation regulations with their bill. The City prints these announcements in both English and Spanish.

In 2016, the City implemented AquaHawk, a web-based water account portal for customers' voluntary use. In addition to adding many other demand management features, customers are now able to set water utility budgets (by dollars or gallons), receive alerts when they are close to exceeding their budget, view projected bills, and have access to their billing history. As of December 31, 2020, the City has a total of 5,492 registered users.



9.1.4.3 School Education Programs

The City has ongoing contracts with environmental educators to provide free school assemblies to Woodland schools. From 2011 to 2017, the City contracted with ZunZun, to perform engaging musical assembly programs about recycling, stormwater, and water conservation. In 2018 the City switched to Eco Hero, to perform at school assemblies. Water conservation topics include the drought, the City's water source, water conservation tips for both indoors and outdoors, how to help trees survive the drought, rainwater retention, and more. Eco Hero holds 12 assemblies in Woodland each school year, reaching over 2,000 students. The City plans to continue to provide environmental assemblies for Woodland elementary schools in the future.

The City also offers about two workshops per year at the Woodland Community College. These workshops are designed to give homeowners the tools and information they need to get started on creating a water-wise front yard. Woodland residents that attend these workshops are given an aerial image of their front yard and City employees work with them to create a custom design that fits their needs. The City works closely with Yolo County Resource Conservation District to conduct these workshops every year. Often, students at the college receive credit for attending water conservation workshops. The City hopes to add a third workshop in the future to help residents learn how to take care of and maintain their landscapes after they have created a water efficient landscape.

9.1.4.4 Information Booths at Fairs and Public Events

The City's Environmental Services Division, of which the Water Conservation Program is a part, is an active participant in community events, particularly when the events pertain to sustainability. The City has hosted booths at the Yolo County Fair, Earth Day Festivals, multiple landscaping and gardening events, plant sales, school fairs, public City events, tree plantings and more. City staff reaches the public through informational booths at 10 or more events annually (with the exception of the year 2020 when most public events with booths were cancelled due to the COVID-19 pandemic).

City conservation staff tailor booths to the expected audience and have many ways of engaging all ages. The City has organized games, asked water conservation questions, led kids' craft activities, and asked for conservation pledges. The City has a wide variety of giveaways that are used as incentives for the public to engage with City staff. Giveaways include shower timers, soil moisture meters, drip gauges, toilet flapper replacements, hose nozzles, sprinkler fixing screw drivers, shower heads, toilet dye tabs, children leak detective kits, as well as informational materials. The City regularly re-examines the most effective and most popular rebates and giveaways in order to best provide the community with water saving devices that will have the greatest impact on water use.

9.1.4.5 Newsletters

The Water Conservation Coordinator organizes a monthly newsletter for the Environmental Services Division titled "EnviroWoodland News". The newsletter includes information from the City's conservation programs regarding recycling, solid waste, climate action, energy, water and stormwater. Water Conservation topics include information about upcoming events, opportunities to get involved such as Fix-A-Leak Week, larger projects like the City's change of water source to surface water, advertising City services like the new Customer Water-Use Portal, and the City's water conservation standings. As of January 2021, the City's "EnviroWoodland" newsletter had 2,199 subscribers.



9.1.4.6 Informative Websites, Online Tools, and Social Media

The Water Conservation Program continuously works to provide up-to-date information on the City's website and social media platforms. Water conservation staff manage a City Water Conservation webpage with seven subpages with topics such as conservation tips, drought updates, and resources. This webpage has grown substantially since 2010, receiving over 2,500 views from 2015 through 2020 and 667 views in 2020 alone.

The City updates the water conservation webpages at least monthly, but often more frequently. The City provides many online resources for water customers, including landscape designs for water-efficient median strips, a home water use calculator, presentations, leak detection information, news updates, and links to other sites for more information.

The Water Conservation Program staff posts four times a week on Facebook, Twitter, and Instagram. As of January 2021, the City's EnviroWoodland Facebook page had 3,393 likes and reached an average of 2,000 people per week. In addition, the City recently started working with the volunteers at the Edible Learning Garden next to City Hall and will begin to upload informational videos in 2021. Anticipated video subjects include workshop demonstrations, water conservation tips, and best water-wise gardening practices.

9.1.4.7 Newspaper Advertisements

The City purchases advertisement space in the local newspaper, The Daily Democrat, and writes press releases for all public water conservation events. The City also regularly writes press releases to update the public about water issues and conservation standings. Each year, the City publishes three or more water conservation press releases in local newspapers that are often picked up by newspapers in other jurisdictions and by television and radio stations. Staff has found that the majority of people who attend events learn of them through these local news outlets.

9.1.4.8 Other Activities

The City has produced a large number of informational materials, such as brochures and flyers, to aid water customers in reducing their water consumption. Topics of informational materials include leak detection, landscaping to save water, water saving tips for pools, water and energy, fall water conservation tips, a tree selection and planting guide for Woodland, a home improvement guide to protecting waterways and Woodland-specific water information. These materials are available online, often in English and Spanish, and are distributed at City facilities and events.

The Water Conservation Program holds approximately three events each year. The most popular event is the Annual Water-Wise Landscape Tour, which began in 2012. The tour visits up to 10 residences in Woodland with drought-tolerant landscapes. In 2019, over 100 people attended the event. The City collects surveys at every event to improve the events each year and provide topics of interest to the public.

Implementation of this DMM is thought to have helped the City achieve its water use targets by getting the public involved with conservation efforts. This achievement has been accomplished by providing incentives in the form of rebates, enabling customers to compare their current water use to their previous use, providing information on drought severity through social media, newsletters, bill inserts, information booths and public events, and by teaching customers what they can do to help the environment.



9.1.5 Programs to Assess and Manage Distribution System Real Loss

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. In 2011, the City conducted a city-wide water line leak detection audit. This study identified several leaks in the City’s distribution system which amounted to an average of 1.2 million gallons of water loss per year. This 2011 audit only evaluated water loss in the City’s distribution system while the more recent audits evaluate the entire system, including hydrant use, project water, street sweeping, etc. The 2019 AWWA Water Audit, which is included in Appendix E, reported that approximately 496 million gallons (about 1,520 AF) of water were lost during calendar year 2019, which was 16.3 percent of the total water supplied.

The City has created a prioritized list based on known leaks and previous repairs in its distribution system pipes and implemented a 10-year system maintenance plan which is continually re-assessed. Each year, 5,000 to 15,000 feet of pipe are replaced. The City has also developed a map of leak and repair locations, in order to better manage the programs aimed to assess and manage distribution system real loss. The pipeline repairs and replacements are funded through an ongoing Capital Improvement Program.

In 2014, an updated map was developed that noted leak and repair locations. The City continues to update this document.

Implementation of this DMM has already helped, and is expected to continue to help, the City achieve its water use targets by reducing the amount of water that is lost from the distribution system.

9.1.6 Water Conservation Program Coordination and Staffing Support

The City has had its Water Conservation Program since 2009. In total, the Water Conservation Budget pays for all or portions of four permanent staff positions for a total of 1.67 permanent Full Time Employees. The Environmental Sustainability Manager oversees the program and devotes about 41 percent of time to the Water Conservation Program. There is one full-time Water Conservation Coordinator who spends 100 percent of their time on water conservation. In addition, 10 percent of a full-time Code Compliance Officer position is dedicated to water conservation issues and 16 percent of an Environmental Resource Analyst position provides additional program support.

Current Water Conservation Program Staff and their contact information is included below:

Ken Loman
Environmental Sustainability Manager
Ken.Loman@CityofWoodland.org
530-661-2060

Sayetsi Sanchez
Water Conservation Coordinator
Sayetsi.Sanchez@CityofWoodland.org
530-661-2067

Chapter 9 Demand Management Measures



Rosie Ledesma
Environmental Resource Analyst
Rosie.Ledesma@CityofWoodland.org
530-661-2059

Mini Garcia
Code Compliance Officer
Mini.Garcia@CityofWoodland.org
530-661-5915

Address:
Water Conservation Program
300 First Street
Woodland, CA 95776

9.1.6.1 Water Conservation Program Funding

The Water Conservation Program is funded through the City’s Water Enterprise Fund in which revenues originate from water utility fees. The Water Conservation Program budgets are based on the fiscal year (FY) from July 1 – June 30. Table 9-2 shows the current and historical total budget allotted to the Water Conservation Program.

	FY 2015-2016	FY 2016-2017	FY 2017-2018	FY 2018 - 2019	FY 2019 - 2020	FY 2020-2021
Personnel Expenditures	193,104.00	168,824.00	176,854.00	178,499.00	184,171.00	196,819.00
Discretionary ^(a)	63,013.00	55,013.00	43,013.00	43,190.00	46,047.00	45,327.00
Non-Discretionary	33,076.00	33,698.00	40,035.00	39,940.00	31,007.00	25,137.00
Total	\$284,193.00	\$257,535.00	\$282,995.99	\$261,420.00	\$261,225.00	\$267,283.00
(a) In addition to typical office expenses, discretionary items include funding for rebates, advertising, contract services, training, and memberships.						

Implementation of this DMM has helped, and is expected to continue to help, the City achieve its water use targets by ensuring that there is enough funding and staffing to support the operation of all the other DMMs.

9.2 OTHER DEMAND MANAGEMENT MEASURES

In addition to the six DMMs described above, the City supports demand management through funding conferences and trainings for its Water Conservation Program staff and participating in relevant local and regional water groups. These programs are described below.



9.2.1 Conferences and Trainings

The City encourages and funds Water Conservation Program staff to attend conferences and workshops to encourage collaboration and information sharing. The City also encourages and funds technical advancement of Water Conservation staff. Specifically, Water Conservation Coordinators become certified in AWWA's Water Use Efficiency Practitioner program.

Each year the Water Conservation Coordinator attends the Peer-to-Peer conference that takes place either in Southern or Northern California. This event holds workshops on California water issues, challenges and opportunities with a broad collaborative framework.

9.2.2 Memberships and Groups

The City is a member of national water conservation groups including AWWA and the Alliance for Water Efficiency. These groups offer the City grant funding and idea sharing opportunities. The City also participates in regional water groups like the Regional Water Authority and the Water Resources Association of Yolo County.

Recently, the City was one of the founding members of a Water Conservation Coordinators group of Yolo County which comprises Water Conservation Coordinators from each of the cities in Yolo County and meets monthly. The City also began a citizen's group for input on water utility issues called the Water Utility Advisory Committee. This committee also meets monthly and weighs in on water utility issues including water conservation. The City also provides monthly water conservation updates to the Sustainability Committee with members from the City Council, City staff, businesses, and the community.

In 2018, the City became a member of the California Water Efficiency Partnership (CalWEP) as described in Section 9.4. This organization offers constant trainings and resources on innovative technologies and practices, advanced research, framework and public policies on water.

9.3 PLANNED IMPLEMENTATION TO ACHIEVE WATER USE TARGETS

In most instances, helping customers understand the savings that can be achieved and methods available to achieve these savings is enough to motivate change. Through the above DMMs, the City can help customers identify these savings, which in turn helps the City to achieve its water use targets.

9.4 MEMBERS OF THE CALIFORNIA WATER EFFICIENCY PARTNERSHIP

In 1991 (amended September 16, 1999), a Memorandum of Understanding (MOU) regarding urban water conservation in California was made that formalizes an agreement between DWR, water utilities, environmental organizations, and other interested groups to implement Best Management Practices (BMP) and make a cooperative effort to reduce the consumption of California's water resources. Until 2018, this MOU was administered by the California Urban Water Conservation Council (CUWCC). In 2018 the CUWCC was sunset and a new organization, CalWEP, was launched to carry forward the expertise and collaboration established by the CUWCC but with a new name and broader framework.

In 2018, the City became a member of the CalWEP because it 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.

CHAPTER 10

Plan Adoption, Submittal, and Implementation

This chapter provides information regarding the notification, public hearing, adoption, and submittal of the City's 2020 UWMP. It also includes discussion on plan implementation and the process of amending the UWMP and the WSCP.

10.1 INCLUSION OF ALL 2020 DATA

Because 2020 is the final compliance year for SB X7-7, the 2020 UWMPs must contain data through the end of 2020. If a water supplier bases its accounting on a fiscal year (July through June) the data must be through the end of the 2020 fiscal year (June 2020). If the water supplier bases its accounting on a calendar year, the data must be through the end of the 2020 calendar year (December 2020).

As indicated in Section 2.4 of this plan, the City uses a calendar year for water supply and demand accounting; and therefore, this 2020 UWMP includes data through December 2020.

10.2 NOTICE OF PUBLIC HEARING

In accordance with the UWMP Act, the City must provide an opportunity for the public to provide input on this 2020 UWMP. The City must consider all public input prior to its adoption. There are two audiences to be notified for the public hearing; cities and counties, and the public.

10.2.1 Notices to Cities and Counties

The City provided greater than a 60-day notice regarding the preparation of its 2020 UWMP to cities and counties in its service area as discussed in Section 2.5 of this plan. In addition, the City provided notices to the following agencies:

- Reclamation District 2035
- University of California, Davis
- Water Resources Association of Yolo County
- Westside Sacramento River IRWM Group
- Woodland Chamber of Commerce, Water Task Force
- WDCWA
- Yolo County Farm Bureau
- Yolo County Flood Control Water Conservation District
- Yolo Subbasin Groundwater Agency

The City coordinated the preparation of its UWMP internally, with Yolo County, and with the above listed agencies. The notices of preparation are included in Appendix D. Upon substantial completion of this 2020 UWMP, the City provided the agencies listed above, including internally within the City and Yolo County, notice of public hearing (Appendix D.)

Notifications to cities and counties in accordance with the UWMP Act, is summarized in Table 10-1 (DWR Table 10-1).



**Table 10-1. Notification to Cities and Counties
(DWR Table 10-1 Retail)**

City Name	60 Day Notice	Notice of Public Hearing
<i>Add additional rows as needed</i>		
City of Davis	Yes	Yes
City of West Sacramento	Yes	Yes
City of Woodland	Yes	Yes
County Name <i>Drop Down List</i>	60 Day Notice	Notice of Public Hearing
<i>Add additional rows as needed</i>		
Yolo County	Yes	Yes

10.2.2 Notice to the Public

The City issued a notice of public hearing to the public and provided a public review period following the notice, and prior to adoption, to allow ample time for public comments to be prepared and received.

A notice of public hearing was issued in accordance with Government Code Section 6066 and was published in the local newspaper (The Daily Democrat) and on the City’s website. Copies of the published Notice of Public Hearing are included in Appendix D.

10.3 PUBLIC HEARING AND ADOPTION

The City encouraged community participation in the development of this 2020 UWMP, including its WSCP, using public notices and web-based communication. The notice included time and place of hearing, as well as the location where the plan is available for public inspection.

The public hearing provided an opportunity for City water users and the general public to become familiar with the 2020 UWMP, and ask questions about its water supply, the City’s continuing plans for providing a reliable, safe, high-quality water supply, and the plans to mitigate various potential water shortage conditions. Copies of the draft UWMP were made available for public inspection at the City’s offices, at local public libraries, and on the City website.



10.3.1 Public Hearing

A public hearing was held on June 1, 2021. As part of the public hearing, the City provided a report on the City's compliance with the Water Conservation Act of 2009. The report included information on the City's baseline, water use targets, compliance, and implementation, as discussed previously in Chapter 5 of this plan.

10.3.2 Adoption

Subsequent to the public hearing, this 2020 UWMP was adopted by the City Council on June 1, 2021. A copy of the adopted resolution is included in Appendix K.

10.4 PLAN SUBMITTAL

This 2020 UWMP will be submitted to DWR within 30 days of adoption and by July 1, 2021. The adopted 2020 UWMP, including the WSCP, will be submitted electronically to DWR using the Water User Efficiency (WUE) data submittal tool. A CD or hardcopy of the adopted 2020 UWMP and WSCP will also be submitted to the California State Library.

No later than 30 days after adoption, a copy of the adopted 2020 UWMP, including the WSCP, will be provided to the County.

10.5 PUBLIC AVAILABILITY

No later than 30 days after submittal to DWR, copies of this Plan, including the adopted WSCP, will be available in the City's offices for public review during normal business hours. An electronic copy of this 2020 UWMP will also be available for review and download on the City's website.

10.6 AMENDING AN ADOPTED UWMP OR WATER SHORTAGE CONTINGENCY PLAN

The City may amend its 2020 UWMP and Water Shortage Contingency Plan jointly or separately. If the City amends one or both documents, the City will follow the notification, public hearing, adoption, and submittal process described in Sections 10.2 through 10.4 above. In addition to submitting amendments to DWR through the WUE data Portal, copies of amendments or changes to the plans will be submitted to the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.



Appendix A

Urban Water Management Planning Act

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WATER CODE - WAT

DIVISION 6. CONSERVATION, DEVELOPMENT, AND UTILIZATION OF STATE WATER RESOURCES [10000 - 12999] (Heading of Division 6 amended by Stats. 1957, Ch. 1932.)

PART 2.55. SUSTAINABLE WATER USE AND DEMAND REDUCTION [10608 - 10609.42] (Part 2.55 added by Stats.2009, 7th Ex. Sess., Ch. 4, Sec. 1.)

CHAPTER 1. General Declarations and Policy [10608 - 10608.8] (Chapter 1 added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 1.)

10608.

The Legislature finds and declares all of the following:

- (a) Water is a public resource that the California Constitution protects against waste and unreasonable use.
- (b) Growing population, climate change, and the need to protect and grow California's economy while protecting and restoring our fish and wildlife habitats make it essential that the state manage its water resources as efficiently as possible.
- (c) Diverse regional water supply portfolios will increase water supply reliability and reduce dependence on the Delta.
- (d) Reduced water use through conservation provides significant energy and environmental benefits, and can help protect water quality, improve stream flows, and reduce greenhouse gas emissions.
- (e) The success of state and local water conservation programs to increase efficiency of water use is best determined on the basis of measurable outcomes related to water use or efficiency.
- (f) Improvements in technology and management practices offer the potential for increasing water efficiency in California over time, providing an essential water management tool to meet the need for water for urban, agricultural, and environmental uses.
- (g) The Governor has called for a 20 percent per capita reduction in urban water use statewide by 2020.
- (h) The factors used to formulate water use efficiency targets can vary significantly from location to location based on factors including weather, patterns of urban and suburban development, and past efforts to enhance water use efficiency.
- (i) Per capita water use is a valid measure of a water provider's efforts to reduce urban water use within its service area. However, per capita water use is less useful for measuring relative water use efficiency between different water providers. Differences in weather, historical patterns of urban and suburban development, and density of housing in a particular location need to be considered when assessing per capita water use as a measure of efficiency.

(Added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 1. (SB 7 7x) Effective February 3, 2010.)

10608.4

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

- (a) Require all water suppliers to increase the efficiency of use of this essential resource.
- (b) Establish a framework to meet the state targets for urban water conservation identified in this part and called for by the Governor.
- (c) Measure increased efficiency of urban water use on a per capita basis.
- (d) Establish a method or methods for urban retail water suppliers to determine targets for achieving increased water use efficiency by the year 2020, in accordance with the Governor's goal of a 20-percent reduction.
- (e) Establish consistent water use efficiency planning and implementation standards for urban water suppliers and agricultural water suppliers.
- (f) Promote urban water conservation standards that are consistent with the California Urban Water Conservation Council's adopted best management practices and the requirements for demand management in Section 10631.
- (g) Establish standards that recognize and provide credit to water suppliers that made substantial capital investments in urban water conservation since the drought of the early 1990s.
- (h) Recognize and account for the investment of urban retail water suppliers in providing recycled water for beneficial uses.
- (i) Require implementation of specified efficient water management practices for agricultural water suppliers.
- (j) Support the economic productivity of California's agricultural, commercial, and industrial sectors.
- (k) Advance regional water resources management.

(Added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 1. (SB 7 7x) Effective February 3, 2010.)



10608.8

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

(2) Because an urban agency is not required to meet its urban water use target until 2020 pursuant to subdivision

(a) of Section 10608.24, an urban retail water supplier's failure to meet those targets shall not establish a violation of law for purposes of any state administrative or judicial proceeding prior to January 1, 2021.

Nothing in this paragraph limits the use of data reported to the department or the board in litigation or an administrative proceeding. This paragraph shall become inoperative on January 1, 2021.

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

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

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

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

(Added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 1. (SB 7 7x) Effective February 3, 2010.)



WATER CODE - WAT

DIVISION 6. CONSERVATION, DEVELOPMENT, AND UTILIZATION OF STATE WATER RESOURCES [10000 - 12999] (*Heading of Division 6 amended by Stats. 1957, Ch. 1932.*)

PART 2.55. SUSTAINABLE WATER USE AND DEMAND REDUCTION [10608 - 10609.42] (*Part 2.55 added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 1.*)

CHAPTER 9. Urban Water Use Objectives and Water Use Reporting [10609 - 10609.38] (*Chapter 9 added by Stats. 2018, Ch. 15, Sec. 7.*)

10609. (a) The Legislature finds and declares that this chapter establishes a method to estimate the aggregate amount of water that would have been delivered the previous year by an urban retail water supplier if all that water had been used efficiently. This estimated aggregate water use is the urban retail water supplier's urban water use objective. The method is based on water use efficiency standards and local service area characteristics for that year. By comparing the amount of water actually used in the previous year with the urban water use objective, local urban water suppliers will be in a better position to help eliminate unnecessary use of water; that is, water used in excess of that needed to accomplish the intended beneficial use.

(b) The Legislature further finds and declares all of the following:

(1) This chapter establishes standards and practices for the following water uses:

(A) Indoor residential use.

(B) Outdoor residential use.

(C) CII water use.

(D) Water losses.

(E) Other unique local uses and situations that can have a material effect on an urban water supplier's total water use.

(2) This chapter further does all of the following:

(A) Establishes a method to calculate each urban water use objective.

(B) Considers recycled water quality in establishing efficient irrigation standards.

(C) Requires the department to provide or otherwise identify data regarding the unique local conditions to support the calculation of an urban water use objective.

(D) Provides for the use of alternative sources of data if alternative sources are shown to be as accurate as, or more accurate than, the data provided by the department.

(E) Requires annual reporting of the previous year's water use with the urban water use objective.

(F) Provides a bonus incentive for the amount of potable recycled water used the previous year when comparing the previous year's water use with the urban water use objective, of up to 10 percent of the urban water use objective.

(3) This chapter requires the department and the board to solicit broad public participation from stakeholders and other interested persons in the development of the standards and the adoption of regulations pursuant to this chapter.

(4) This chapter preserves the Legislature's authority over long-term water use efficiency target setting and ensures appropriate legislative oversight of the implementation of this chapter by doing all of the following:

(A) Requiring the Legislative Analyst to conduct a review of the implementation of this chapter, including compliance with the adopted standards and regulations, accuracy of the data, use of alternate data, and other

issues the Legislative Analyst deems appropriate.

(B) Stating legislative intent that the director of the department and the chairperson of the board appear before the appropriate Senate and Assembly policy committees to report on progress in implementing this chapter.

(C) Providing one-time-only authority to the department and board to adopt water use efficiency standards, except as explicitly provided in this chapter. Authorization to update the standards shall require separate legislation.

(c) It is the intent of the Legislature that the following principles apply to the development and implementation of long-term standards and urban water use objectives:

(1) Local urban retail water suppliers should have primary responsibility for meeting standards-based water use targets, and they shall retain the flexibility to develop their water supply portfolios, design and implement water conservation strategies, educate their customers, and enforce their rules.

(2) Long-term standards and urban water use objectives should advance the state's goals to mitigate and adapt to climate change.

(3) Long-term standards and urban water use objectives should acknowledge the shade, air quality, and heat-island reduction benefits provided to communities by trees through the support of water-efficient irrigation practices that keep trees healthy.

(4) The state should identify opportunities for streamlined reporting, eliminate redundant data submissions, and incentivize open access to data collected by urban and agricultural water suppliers.

(Amended by Stats. 2019, Ch. 497, Sec. 287. (AB 991) Effective January 1, 2020.)

10609.2. (a) The board, in coordination with the department, shall adopt long-term standards for the efficient use of water pursuant to this chapter on or before June 30, 2022.

(b) Standards shall be adopted for all of the following:

(1) Outdoor residential water use.

(2) Outdoor irrigation of landscape areas with dedicated irrigation meters in connection with CII water use.

(3) A volume for water loss.

(c) When adopting the standards under this section, the board shall consider the policies of this chapter and the proposed efficiency standards' effects on local wastewater management, developed and natural parklands, and urban tree health. The standards and potential effects shall be identified by May 30, 2022. The board shall allow for public comment on potential effects identified by the board under this subdivision.

(d) The long-term standards shall be set at a level designed so that the water use objectives, together with other demands excluded from the long-term standards such as CII indoor water use and CII outdoor water use not connected to a dedicated landscape meter, would exceed the statewide conservation targets required pursuant to Chapter 3 (commencing with Section 10608.16).

(e) The board, in coordination with the department, shall adopt by regulation variances recommended by the department pursuant to Section 10609.14 and guidelines and methodologies pertaining to the calculation of an urban retail water supplier's urban water use objective recommended by the department pursuant to Section 10609.16.

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.4. (a) (1) Until January 1, 2025, the standard for indoor residential water use shall be 55 gallons per capita daily.

(2) Beginning January 1, 2025, and until January 1, 2030, the standard for indoor residential water use shall be the greater of 52.5 gallons per capita daily or a standard recommended pursuant to subdivision (b).

(3) Beginning January 1, 2030, the standard for indoor residential water use shall be the greater of 50 gallons per capita daily or a standard recommended pursuant to subdivision (b).

(b) (1) The department, in coordination with the board, shall conduct necessary studies and investigations and may jointly recommend to the Legislature a standard for indoor residential water use that more appropriately reflects best practices for indoor residential water use than the standard described in subdivision (a). A report on the results of the studies and investigations shall be made to the chairpersons of the relevant policy committees of each house of the Legislature by January 1, 2021, and shall include information necessary to support the recommended standard, if there is one. The studies and investigations shall also include an analysis of the benefits and impacts of how the changing standard for indoor residential water use will impact water and wastewater

management, including potable water usage, wastewater, recycling and reuse systems, infrastructure, operations, and supplies.

(2) The studies, investigations, and report described in paragraph (1) shall include collaboration with, and input from, a broad group of stakeholders, including, but not limited to, environmental groups, experts in indoor plumbing, and water, wastewater, and recycled water agencies.

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.6. (a) (1) The department, in coordination with the board, shall conduct necessary studies and investigations and recommend, no later than October 1, 2021, standards for outdoor residential use for adoption by the board in accordance with this chapter.

(2) (A) The standards shall incorporate the principles of the model water efficient landscape ordinance adopted by the department pursuant to the Water Conservation in Landscaping Act (Article 10.8 (commencing with Section 65591) of Chapter 3 of Division 1 of Title 7 of the Government Code).

(B) The standards shall apply to irrigable lands.

(C) The standards shall include provisions for swimming pools, spas, and other water features. Ornamental water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, shall be analyzed separately from swimming pools and spas.

(b) The department shall, by January 1, 2021, provide each urban retail water supplier with data regarding the area of residential irrigable lands in a manner that can reasonably be applied to the standards adopted pursuant to this section.

(c) The department shall not recommend standards pursuant to this section until it has conducted pilot projects or studies, or some combination of the two, to ensure that the data provided to local agencies are reasonably accurate for the data's intended uses, taking into consideration California's diverse landscapes and community characteristics.

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.8. (a) The department, in coordination with the board, shall conduct necessary studies and investigations and recommend, no later than October 1, 2021, standards for outdoor irrigation of landscape areas with dedicated irrigation meters or other means of calculating outdoor irrigation use in connection with CII water use for adoption by the board in accordance with this chapter.

(b) The standards shall incorporate the principles of the model water efficient landscape ordinance adopted by the department pursuant to the Water Conservation in Landscaping Act (Article 10.8 (commencing with Section 65591) of Chapter 3 of Division 1 of Title 7 of the Government Code).

(c) The standards shall include an exclusion for water for commercial agricultural use meeting the definition of subdivision (b) of Section 51201 of the Government Code.

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.9. For purposes of Sections 10609.6 and 10609.8, "principles of the model water efficient landscape ordinance" means those provisions of the model water efficient landscape ordinance applicable to the establishment or determination of the amount of water necessary to efficiently irrigate both new and existing landscapes. These provisions include, but are not limited to, all of the following:

(a) Evapotranspiration adjustment factors, as applicable.

(b) Landscape area.

(c) Maximum applied water allowance.

(d) Reference evapotranspiration.

(e) Special landscape areas, including provisions governing evapotranspiration adjustment factors for different types of water used for irrigating the landscape.

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.10. (a) The department, in coordination with the board, shall conduct necessary studies and investigations and recommend, no later than October 1, 2021, performance measures for CII water use for adoption by the board in accordance with this chapter.

(b) Prior to recommending performance measures for CII water use, the department shall solicit broad public participation from stakeholders and other interested persons relating to all of the following:

- (1) Recommendations for a CII water use classification system for California that address significant uses of water.
- (2) Recommendations for setting minimum size thresholds for converting mixed CII meters to dedicated irrigation meters, and evaluation of, and recommendations for, technologies that could be used in lieu of requiring dedicated irrigation meters.
- (3) Recommendations for CII water use best management practices, which may include, but are not limited to, water audits and water management plans for those CII customers that exceed a recommended size, volume of water use, or other threshold.

(c) Recommendations of appropriate performance measures for CII water use shall be consistent with the October 21, 2013, report to the Legislature by the Commercial, Industrial, and Institutional Task Force entitled "Water Use Best Management Practices," including the technical and financial feasibility recommendations provided in that report, and shall support the economic productivity of California's commercial, industrial, and institutional sectors.

(d) (1) The board, in coordination with the department, shall adopt performance measures for CII water use on or before June 30, 2022.

(2) Each urban retail water supplier shall implement the performance measures adopted by the board pursuant to paragraph (1).

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.12. The standards for water loss for urban retail water suppliers shall be the standards adopted by the board pursuant to subdivision (i) of Section 10608.34.

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.14. (a) The department, in coordination with the board, shall conduct necessary studies and investigations and, no later than October 1, 2021, recommend for adoption by the board in accordance with this chapter appropriate variances for unique uses that can have a material effect on an urban retail water supplier's urban water use objective.

(b) Appropriate variances may include, but are not limited to, allowances for the following:

- (1) Significant use of evaporative coolers.
- (2) Significant populations of horses and other livestock.
- (3) Significant fluctuations in seasonal populations.
- (4) Significant landscaped areas irrigated with recycled water having high levels of total dissolved solids.
- (5) Significant use of water for soil compaction and dust control.
- (6) Significant use of water to supplement ponds and lakes to sustain wildlife.
- (7) Significant use of water to irrigate vegetation for fire protection.
- (8) Significant use of water for commercial or noncommercial agricultural use.

(c) The department, in recommending variances for adoption by the board, shall also recommend a threshold of significance for each recommended variance.

(d) Before including any specific variance in calculating an urban retail water supplier's water use objective, the urban retail water supplier shall request and receive approval by the board for the inclusion of that variance.

(e) The board shall post on its Internet Web site all of the following:

- (1) A list of all urban retail water suppliers with approved variances.
- (2) The specific variance or variances approved for each urban retail water supplier.
- (3) The data supporting approval of each variance.

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.15. To help streamline water data reporting, the department and the board shall do all of the following:

(a) Identify urban water reporting requirements shared by both agencies, and post on each agency's Internet Web site how the data is used for planning, regulatory, or other purposes.

(b) Analyze opportunities for more efficient publication of urban water reporting requirements within each agency, and analyze how each agency can integrate various data sets in a publicly accessible location, identify priority actions, and implement priority actions identified in the analysis.

(c) Make appropriate data pertaining to the urban water reporting requirements that are collected by either agency available to the public according to the principles and requirements of the Open and Transparent Water Data Act (Part 4.9 (commencing with Section 12400)).

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.16. The department, in coordination with the board, shall conduct necessary studies and investigations and recommend, no later than October 1, 2021, guidelines and methodologies for the board to adopt that identify how an urban retail water supplier calculates its urban water use objective. The guidelines and methodologies shall address, as necessary, all of the following:

(a) Determining the irrigable lands within the urban retail water supplier's service area.

(b) Updating and revising methodologies described pursuant to subparagraph (A) of paragraph (1) of subdivision (h) of Section 10608.20, as appropriate, including methodologies for calculating the population in an urban retail water supplier's service area.

(c) Using landscape area data provided by the department or alternative data.

(d) Incorporating precipitation data and climate data into estimates of a urban retail water supplier's outdoor irrigation budget for its urban water use objective.

(e) Estimating changes in outdoor landscape area and population, and calculating the urban water use objective, for years when updated landscape imagery is not available from the department.

(f) Determining acceptable levels of accuracy for the supporting data, the urban water use objective, and compliance with the urban water use objective.

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.18. The department and the board shall solicit broad public participation from stakeholders and other interested persons in the development of the standards and the adoption of regulations pursuant to this chapter. The board shall hold at least one public meeting before taking any action on any standard or variance recommended by the department.

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.20. (a) Each urban retail water supplier shall calculate its urban water use objective no later than January 1, 2024, and by January 1 every year thereafter.

(b) The calculation shall be based on the urban retail water supplier's water use conditions for the previous calendar or fiscal year.

(c) Each urban water supplier's urban water use objective shall be composed of the sum of the following:

(1) Aggregate estimated efficient indoor residential water use.

(2) Aggregate estimated efficient outdoor residential water use.

(3) Aggregate estimated efficient outdoor irrigation of landscape areas with dedicated irrigation meters or equivalent technology in connection with CII water use.

(4) Aggregate estimated efficient water losses.

(5) Aggregate estimated water use in accordance with variances, as appropriate.

(d) (1) An urban retail water supplier that delivers water from a groundwater basin, reservoir, or other source that is augmented by potable reuse water may adjust its urban water use objective by a bonus incentive calculated pursuant to this subdivision.

(2) The water use objective bonus incentive shall be the volume of its potable reuse delivered to residential water users and to landscape areas with dedicated irrigation meters in connection with CII water use, on an acre-foot basis.

(3) The bonus incentive pursuant to paragraph (1) shall be limited in accordance with one of the following:

(A) The bonus incentive shall not exceed 15 percent of the urban water supplier's water use objective for any potable reuse water produced at an existing facility.

(B) The bonus incentive shall not exceed 10 percent of the urban water supplier's water use objective for any potable reuse water produced at any facility that is not an existing facility.

(4) For purposes of this subdivision, "existing facility" means a facility that meets all of the following:

(A) The facility has a certified environmental impact report, mitigated negative declaration, or negative declaration on or before January 1, 2019.

(B) The facility begins producing and delivering potable reuse water on or before January 1, 2022.

(C) The facility uses microfiltration and reverse osmosis technologies to produce the potable reuse water.

(e) (1) The calculation of the urban water use objective shall be made using landscape area and other data provided by the department and pursuant to the standards, guidelines, and methodologies adopted by the board. The department shall provide data to the urban water supplier at a level of detail sufficient to allow the urban water supplier to verify its accuracy at the parcel level.

(2) Notwithstanding paragraph (1), an urban retail water supplier may use alternative data in calculating the urban water use objective if the supplier demonstrates to the department that the alternative data are equivalent, or superior, in quality and accuracy to the data provided by the department. The department may provide technical assistance to an urban retail water supplier in evaluating whether the alternative data are appropriate for use in calculating the supplier's urban water use objective.

(Amended by Stats. 2019, Ch. 239, Sec. 2. (AB 1414) Effective January 1, 2020.)

10609.21. (a) For purposes of Section 10609.20, and notwithstanding paragraph (4) of subdivision (d) of Section 10609.20, "existing facility" also includes the North City Project, phase one of the Pure Water San Diego Program, for which an environmental impact report was certified on April 10, 2018.

(b) This section shall become operative on January 1, 2019.

(Added by Stats. 2018, Ch. 453, Sec. 4. (SB 875) Effective September 17, 2018. Section operative January 1, 2019, by its own provisions.)

10609.22. (a) An urban retail water supplier shall calculate its actual urban water use no later than January 1, 2024, and by January 1 every year thereafter.

(b) The calculation shall be based on the urban retail water supplier's water use for the previous calendar or fiscal year.

(c) Each urban water supplier's urban water use shall be composed of the sum of the following:

(1) Aggregate residential water use.

(2) Aggregate outdoor irrigation of landscape areas with dedicated irrigation meters in connection with CII water use.

(3) Aggregate water losses.

(Amended by Stats. 2019, Ch. 239, Sec. 3. (AB 1414) Effective January 1, 2020.)

10609.24. (a) An urban retail water supplier shall submit a report to the department no later than January 1, 2024, and by January 1 every year thereafter. The report shall include all of the following:

(1) The urban water use objective calculated pursuant to Section 10609.20 along with relevant supporting data.

(2) The actual urban water use calculated pursuant to Section 10609.22 along with relevant supporting data.

(3) Documentation of the implementation of the performance measures for CII water use.

(4) A description of the progress made towards meeting the urban water use objective.

(5) The validated water loss audit report conducted pursuant to Section 10608.34.

(b) The department shall post the reports and information on its internet website.

(c) The board may issue an information order or conservation order to, or impose civil liability on, an entity or individual for failure to submit a report required by this section.

(Amended by Stats. 2019, Ch. 239, Sec. 4. (AB 1414) Effective January 1, 2020.)

10609.25. As part of the first report submitted to the department by an urban retail water supplier no later than January 1, 2024, pursuant to subdivision (a) of Section 10609.24, each urban retail water supplier shall provide a

narrative that describes the water demand management measures that the supplier plans to implement to achieve its urban water use objective by January 1, 2027.

(Added by Stats. 2019, Ch. 239, Sec. 5. (AB 1414) Effective January 1, 2020.)

10609.26. (a) (1) On and after January 1, 2024, the board may issue informational orders pertaining to water production, water use, and water conservation to an urban retail water supplier that does not meet its urban water use objective required by this chapter. Informational orders are intended to obtain information on supplier activities, water production, and conservation efforts in order to identify technical assistance needs and assist urban water suppliers in meeting their urban water use objectives.

(2) In determining whether to issue an informational order, the board shall consider the degree to which the urban retail water supplier is not meeting its urban water use objective, information provided in the report required by Section 10609.24, and actions the urban retail water supplier has implemented or will implement in order to help meet the urban water use objective.

(3) The board shall share information received pursuant to this subdivision with the department.

(4) An urban water supplier may request technical assistance from the department. The technical assistance may, to the extent available, include guidance documents, tools, and data.

(b) On and after January 1, 2025, the board may issue a written notice to an urban retail water supplier that does not meet its urban water use objective required by this chapter. The written notice may warn the urban retail water supplier that it is not meeting its urban water use objective described in Section 10609.20 and is not making adequate progress in meeting the urban water use objective, and may request that the urban retail water supplier address areas of concern in its next annual report required by Section 10609.24. In deciding whether to issue a written notice, the board may consider whether the urban retail water supplier has received an informational order, the degree to which the urban retail water supplier is not meeting its urban water use objective, information provided in the report required by Section 10609.24, and actions the urban retail water supplier has implemented or will implement in order to help meet its urban water use objective.

(c) (1) On and after January 1, 2026, the board may issue a conservation order to an urban retail water supplier that does not meet its urban water use objective. A conservation order may consist of, but is not limited to, referral to the department for technical assistance, requirements for education and outreach, requirements for local enforcement, and other efforts to assist urban retail water suppliers in meeting their urban water use objective.

(2) In issuing a conservation order, the board shall identify specific deficiencies in an urban retail water supplier's progress towards meeting its urban water use objective, and identify specific actions to address the deficiencies.

(3) The board may request that the department provide an urban retail water supplier with technical assistance to support the urban retail water supplier's actions to remedy the deficiencies.

(d) A conservation order issued in accordance with this chapter may include requiring actions intended to increase water-use efficiency, but shall not curtail or otherwise limit the exercise of a water right, nor shall it require the imposition of civil liability pursuant to Section 377.

(Amended by Stats. 2019, Ch. 239, Sec. 6. (AB 1414) Effective January 1, 2020.)

10609.27. Notwithstanding Section 10609.26, the board shall not issue an information order, written notice, or conservation order pursuant to Section 10609.26 if both of the following conditions are met:

(a) The board determines that the urban retail water supplier is not meeting its urban water use objective solely because the volume of water loss exceeds the urban retail water supplier's standard for water loss.

(b) Pursuant to Section 10608.34, the board is taking enforcement action against the urban retail water supplier for not meeting the performance standards for the volume of water losses.

(Added by Stats. 2019, Ch. 203, Sec. 1. (SB 134) Effective January 1, 2020.)

10609.28. The board may issue a regulation or informational order requiring a wholesale water supplier, an urban retail water supplier, or a distributor of a public water supply, as that term is used in Section 350, to provide a monthly report relating to water production, water use, or water conservation.

(Added by Stats. 2018, Ch. 14, Sec. 12. (SB 606) Effective January 1, 2019.)

10609.30. On or before January 10, 2024, the Legislative Analyst shall provide to the appropriate policy committees of both houses of the Legislature and the public a report evaluating the implementation of the water use efficiency

standards and water use reporting pursuant to this chapter. The board and the department shall provide the Legislative Analyst with the available data to complete this report.

(a) The report shall describe all of the following:

(1) The rate at which urban retail water users are complying with the standards, and factors that might facilitate or impede their compliance.

(2) The accuracy of the data and estimates being used to calculate urban water use objectives.

(3) Indications of the economic impacts, if any, of the implementation of this chapter on urban water suppliers and urban water users, including CII water users.

(4) The frequency of use of the bonus incentive, the volume of water associated with the bonus incentive, value to urban water suppliers of the bonus incentive, and any implications of the use of the bonus incentive on water use efficiency.

(5) The early indications of how implementing this chapter might impact the efficiency of statewide urban water use.

(6) Recommendations, if any, for improving statewide urban water use efficiency and the standards and practices described in this chapter.

(7) Any other issues the Legislative Analyst deems appropriate.

(Added by Stats. 2018, Ch. 14, Sec. 13. (SB 606) Effective January 1, 2019.)

10609.32. It is the intent of the Legislature that the chairperson of the board and the director of the department appear before the appropriate policy committees of both houses of the Legislature on or around January 1, 2026, and report on the implementation of the water use efficiency standards and water use reporting pursuant to this chapter. It is the intent of the Legislature that the topics to be covered include all of the following:

(a) The rate at which urban retail water suppliers are complying with the standards, and factors that might facilitate or impede their compliance.

(b) What enforcement actions have been taken, if any.

(c) The accuracy of the data and estimates being used to calculate urban water use objectives.

(d) Indications of the economic impacts, if any, of the implementation of this chapter on urban water suppliers and urban water users, including CII water users.

(e) The frequency of use of the bonus incentive, the volume of water associated with the bonus incentive, value to urban water suppliers of the bonus incentive, and any implications of the use of the bonus incentive on water use efficiency.

(f) An assessment of how implementing this chapter is affecting the efficiency of statewide urban water use.

(Added by Stats. 2018, Ch. 14, Sec. 14. (SB 606) Effective January 1, 2019.)

10609.34. Notwithstanding Section 15300.2 of Title 14 of the California Code of Regulations, an action of the board taken under this chapter shall be deemed to be a Class 8 action, within the meaning of Section 15308 of Title 14 of the California Code of Regulations, provided that the action does not involve relaxation of existing water conservation or water use standards.

(Added by Stats. 2018, Ch. 14, Sec. 15. (SB 606) Effective January 1, 2019.)

10609.36. (a) Nothing in this chapter shall be construed to determine or alter water rights. Sections 1010 and 1011 apply to water conserved through implementation of this chapter.

(b) Nothing in this chapter shall be construed to authorize the board to update or revise water use efficiency standards authorized by this chapter except as explicitly provided in this chapter. Authorization to update the standards beyond that explicitly provided in this chapter shall require separate legislation.

(c) Nothing in this chapter shall be construed to limit or otherwise affect the use of recycled water as seawater barriers for groundwater salinity management.

(Added by Stats. 2018, Ch. 14, Sec. 16. (SB 606) Effective January 1, 2019.)

10609.38. The board may waive the requirements of this chapter for a period of up to five years for any urban retail water supplier whose water deliveries are significantly affected by changes in water use as a result of damage from a disaster such as an earthquake or fire. In establishing the period of a waiver, the board shall take into

consideration the breadth of the damage and the time necessary for the damaged areas to recover from the disaster.

(Added by Stats. 2018, Ch. 14, Sec. 17. (SB 606) Effective January 1, 2019.)



DIVISION 6. CONSERVATION, DEVELOPMENT, AND UTILIZATION OF STATE WATER RESOURCES [10000 - 12999]
(*Heading of Division 6 amended by Stats. 1957, Ch. 1932.*)

PART 2.6. URBAN WATER MANAGEMENT PLANNING [10610 - 10657] (*Part 2.6 added by Stats. 1983, Ch. 1009, Sec..*)

CHAPTER 1. General Declaration and Policy [10610 - 10610.4] (*Chapter 1 added by Stats. 1983, Ch. 1009, Alec. 1.*)

[10610](#) This part shall be known and may be cited as the “Urban Water Management Planning Act.”

(*Added by Stats. 1983, Ch. 1009, Sec. 1.*)

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

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

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

(3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate, and increasing long-term water conservation among Californians, improving water use efficiency within the state's communities and agricultural production, and strengthening local and regional drought planning are critical to California's resilience to drought and climate change.

(4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years now and into the foreseeable future, and every urban water supplier should collaborate closely with local land-use authorities to ensure water demand forecasts are consistent with current land-use planning.

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

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

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

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

(9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.

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

(*Amended by Stats. 201B, Ch. 14, Sec. 18. (SB 606) Effective January 1, 201 9.*)

[10610.4](#) The Legislature finds and declares that it is the policy of the state as follows:

(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.



CHAPTER 2. Definitions [10611 - 10618] (Chapter 2 added by Stats. 1983, Ch. 1009, iec. 1.)

[10611.](#) Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

(Added by Stats. 1983, Ch. 1009, Sec. 1.)

[10611.3](#) “Customer” means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

Added by renumbering Section 10612 by Stats. 2018, Ch. 14, Sec. 20. (SB 606) Effective January 1, 2019.)

[10611.5](#) “Demand management” means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

(Amended by Stats. 1995, Ch. 854, Sec. 3. Effective January 1, 1996.)

[10612](#) “Drought risk assessment” means a method that examines water shortage risks based on the driest five- year historic sequence for the agency’s water supply, as described in subdivision (b) of Section 10635.

(Added by Stats. 2018, Ch. 14, Sec. 21. (SB 606) Effective January 1, 2019.)

[10613.](#) “Efficient use” means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

(Added by Stats. 1983, Ch. 1009, Exec. 1.)

[10614.](#) “Person” means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

(Added by Stats. 1983, Ch. 1009, Sec. 1.)

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

(Amended by Stats. 1995, Ch. 854, Sec. 4. Effective January 1, 1996.)

[10616.](#) “Public agency” means any board, commission, county, city and county, city, regional agency, district, or other public entity.

(Added by Stats. 1983, Ch. 1009, Sec. 1.)

[10616.5](#) “Recycled water” means the reclamation and reuse of wastewater for beneficial use.

(Added by Stats. 1995, Ch. 854, Sec. 5. Effective January 1, 1996)

[10617.](#) “Urban water supplier” means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water



supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

(Amended by Stats. 1996, Ch. 1023, Sec. 428. Effective January 29, 1996.)

[10617.5](#) “Water shortage contingency plan” means a document that incorporates the provisions detailed in subdivision (a) of Section 10632 and is subsequently adopted by an urban water supplier pursuant to this article.

(Added by Stats. 2018, Ch. 14, Sec. 22. (SB 606) Effective January 1, 2019)

[10618](#) “Water supply and demand assessment” means a method that looks at current year and one or more dry year supplies and demands for determining water shortage risks, as described in Section 10632.1.

(Added by Stats. 2018, Ch. 14, Sec. 23 (SB 606). Effective January 1, 2019)



CHAPTER 3. Urban Water Management Plans [10620 - 10645] (Chapter 3 added by Stabs. 1983, Ch. 1009, Sec. 1.)

ARTICLE 1. General Provisions [10620 - 1 0621] (Article 1 added by Stats. 1 983, Ch. 1009, Sec. 1.)

- [10620.](#) (a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).
- (b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.
- (c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.
- (d) (l) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation, efficient water use, and improved local drought resilience.
- (2) Notwithstanding paragraph (1), each urban water supplier shall develop its own water shortage contingency plan, but an urban water supplier may incorporate, collaborate, and otherwise share information with other urban water suppliers or other governing entities participating in an areawide, regional, watershed, or basinwide urban water management plan, an agricultural management plan, or groundwater sustainability plan development.
- (3) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.
- (e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.
- (f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.
- (Amended by Stats. 2018, Ch. 14, Sec. 24. (SB 606) Effective January 1, 2019.)*

- [10621](#) (a) Each urban water supplier shall update its plan at least once every five years on or before July 1, in years ending in six and one, incorporating updated and new information from the five years preceding each update.
- (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. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.
- (c) An urban water supplier regulated by the Public Utilities Commission shall include its most recent plan and water shortage contingency plan as part of the supplier's general rate case filings.
- (d) 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)
- (e) Each urban water supplier shall update and submit its 2015 plan to the department by July1, 2016



(f) Each urban water supplier shall update and submit its 2020 plan to the department by July 1,2021

(Amended by Stats. 2019, Ch. 239, Sec. 7. (AB 1414) Effective January 1, 2020.)



CHAPTER 3. Urban Water Management Plans [10620 - 10645] (Chapter 3 added by Stats. 1983, Ch. 1009, Sec. 1.)

ARTICLE 2. Contents of Plans [10630 - 10634] (Article 2 added by Stats. 1983, Ch. 1009, Sec. 1.)

[10630](#) It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied, while accounting for impacts from climate change.

(Amended by Stats. 2018, Ch. 14, Sec. 26. (SB 606) Effective January 1, 2019.)

[10630.5](#) Each plan shall include a simple lay description of how much water the agency has on a reliable basis, how much it needs for the foreseeable future, what the agency's strategy is for meeting its water needs, the challenges facing the agency, and any other information necessary to provide a general understanding of the agency's plan.

(Added by Stats. 2018, Ch. 14, Sec. 27. (SB 606) Effective January 1, 2019.)

[10631](#) A plan shall be adopted in accordance with this chapter that shall do all of the following:

(a) Describe the service area of the supplier, including current and projected population, climate, and other social, economic, and demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available. The description shall include the current and projected land uses within the existing or anticipated service area affecting the supplier's water management planning. Urban water suppliers shall coordinate with local or regional land use authorities to determine the most appropriate land use information, including, where appropriate, land use information obtained from local or regional land use authorities, as developed pursuant to Article 5 (commencing with Section 65300) of Chapter 3 of Division 1 of Title 7 of the Government Code.

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a), providing supporting and related information, including all of the following:

(1) A detailed discussion of anticipated supply availability under a normal water year, single dry year, and droughts lasting at least five years, as well as more frequent and severe periods of drought, as described in the drought risk assessment. For each source of water supply, consider any information pertinent to the reliability analysis conducted pursuant to Section 10635, including changes in supply due to climate change.

(2) When multiple sources of water supply are identified, a description of the management of each supply in correlation with the other identified supplies.

(3) For any planned sources of water supply, a description of the measures that are being undertaken to acquire and develop those water supplies.

(4) If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information:

The current version of any groundwater sustainability plan or alternative adopted pursuant to Part 2.74 (commencing with Section 10720), any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management for basins underlying the urban water supplier's service area.



(A) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. 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. For a basin that has not been adjudicated, information as to whether the department has identified the basin as a high- or medium-priority basin 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 coordinate with groundwater sustainability agencies or groundwater management agencies listed in subdivision (c) of Section 10723 to maintain or achieve sustainable groundwater conditions in accordance with a groundwater sustainability plan or alternative adopted pursuant to Part 2.74 (commencing with Section 10720).

(B) 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.

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

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

(d) (I) For an urban retail water supplier, 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, based upon information developed pursuant to subdivision (a), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following:

(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.

(J) Distribution system water loss.

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

(3) (A) The distribution system water loss shall be quantified for each of the five years preceding the plan update, in accordance with rules adopted pursuant to Section 10608.34.

(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.

(C) In the plan due July 1, 2021, and in each update thereafter, data shall be included to show whether the urban retail water supplier met the distribution loss standards enacted by the board pursuant to Section 10608.34.

(4) (A) Water use projections, where available, shall 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.

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

(1) (A) For an urban retail water supplier, as defined in Section 10608.12, a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years. 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.

(B) For the supplement required of urban retail water suppliers by paragraph (2) of subdivision (f) of Section 10621, a narrative that describes the water demand management measures that the supplier plans to implement to achieve its urban water use objective by January 1, 2027, pursuant to Chapter 9 (commencing with Section 10609) of Part 2.55.

(C) 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.

(2) For an urban wholesale water supplier, as defined in Section 10608.12, a narrative description of the items in clauses (ii), (iv), (vi), and (vii) of subparagraph (C) of paragraph (1), and a narrative description of its distribution system asset management and wholesale supplier assistance programs.

(f) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use, as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in normal and single-dry water years and for a period of drought lasting five consecutive 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.

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



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

(Amended by Stats. 2018, Ch. 14, Sec. 28. (SB 606) Effective January 1, 2019.)

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

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

(Added by Stats. 2005, Ch. 727, Sec. 2. Effective January 1, 2006.)

[10631.2.](#) (a) In addition to the requirements of Section 10631, an urban water management plan shall include any of the following information that the urban water supplier can readily obtain:

- (1) An estimate of the amount of energy used to extract or divert water supplies.
- (2) An estimate of the amount of energy used to convey water supplies to the water treatment plants or distribution systems.
- (3) An estimate of the amount of energy used to treat water supplies.
- (4) An estimate of the amount of energy used to distribute water supplies through its distribution systems.
- (5) An estimate of the amount of energy used for treated water supplies in comparison to the amount used for nontreated water supplies.
- (6) An estimate of the amount of energy used to place water into or withdraw from storage.
- (7) Any other energy-related information the urban water supplier deems appropriate.

(b) The department shall include in its guidance for the preparation of urban water management plans a methodology for the voluntary calculation or estimation of the energy intensity of urban water systems. The department may consider studies and calculations conducted by the Public Utilities Commission in developing the methodology.

(c) The Legislature finds and declares that energy use is only one factor in water supply planning and shall not be considered independently of other factors.

(Amended by Stats. 2018, Ch. 14, Sec. 29. (SB 606a) Effective January 1, 2019.)

[10632](#) (a) Every urban water supplier shall prepare and adopt a water shortage contingency plan as part of its urban water management plan that consists of each of the following elements:

- (1) The analysis of water supply reliability conducted pursuant to Section 10635.
- (2) The procedures used in conducting an annual water supply and demand assessment



that include, at a minimum, both of the following:

(A) The written decision making process that an urban water supplier will use each year to determine its water supply reliability.

(B) The key data inputs and assessment methodology used to evaluate the urban water supplier's water supply reliability for the current year and one dry year, including all of the following:

(i) Current year unconstrained demand, considering weather, growth, and other influencing factors, such as policies to manage current supplies to meet demand objectives in future years, as applicable.

(ii) Current year available supply, considering hydrological and regulatory conditions in the current year and one dry year. The annual supply and demand assessment may consider more than one dry year solely at the discretion of the urban water supplier.

(iii) Existing infrastructure capabilities and plausible constraints.

(iv) A defined set of locally applicable evaluation criteria that are consistently relied upon for each annual water supply and demand assessment.

(v) A description and quantification of each source of water supply.

(3) (A) Six standard water shortage levels corresponding to progressive ranges of up to 10, 20, 30, 40, and 50 percent shortages and greater than 50 percent shortage. Urban water suppliers shall define these shortage levels based on the suppliers' water supply conditions, including percentage reductions in water supply, changes in groundwater levels, changes in surface elevation or level of subsidence, or other changes in hydrological or other local conditions indicative of the water supply available for use. Shortage levels shall also apply to catastrophic interruption of water supplies, including, but not limited to, a regional power outage, an earthquake, and other potential emergency events.

(B) An urban water supplier with an existing water shortage contingency plan that uses different water shortage levels may comply with the requirement in subparagraph (A) by developing and including a cross-reference relating its existing categories to the six standard water shortage levels.

(4) Shortage response actions that align with the defined shortage levels and include, at a minimum, all of the following:

(A) Locally appropriate supply augmentation actions. Locally appropriate demand reduction actions to adequately respond to shortages.

(B) Locally appropriate operational changes.

(C) Additional, mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions and appropriate to the local conditions.

(D) For each action, an estimate of the extent to which the gap between supplies and demand will be reduced by implementation of the action.

(5) Communication protocols and procedures to inform customers, the public, interested parties, and local, regional, and state governments, regarding, at a minimum, all of the following:

(A) Any current or predicted shortages as determined by the annual water supply and demand assessment described pursuant to Section 10632.1.

(B) Any shortage response actions triggered or anticipated to be triggered by the annual water supply and demand assessment described pursuant to Section 10632.1.

(C) Any other relevant communications.

(6) For an urban retail water supplier, customer compliance, enforcement, appeal, and exemption



procedures for triggered shortage response actions as determined pursuant to Section 10632.2.

(7) (A) A description of the legal authorities that empower the urban water supplier to implement and enforce its shortage response actions specified in paragraph (4) that may include, but are not limited to, statutory authorities, ordinances, resolutions, and contract provisions.

(B) A statement that an urban water supplier shall declare a water shortage emergency in accordance with Chapter 3 (commencing with Section 350) of Division 1.

(C) A statement that an urban water supplier shall coordinate with any city or county within which it provides water supply services for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code.

(8) A description of the financial consequences of, and responses for, drought conditions, including, but not limited to, all of the following:

(A) A description of potential revenue reductions and expense increases associated with activated shortage response actions described in paragraph (4).

(B) A description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions described in paragraph (4).

(C) A description of the cost of compliance with Chapter 3.3 (commencing with Section 365) of Division 1.

(9) For an urban retail water supplier, monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance and to meet state reporting requirements.

(10) Reevaluation and improvement procedures for systematically monitoring and evaluating the functionality of the water shortage contingency plan in order to ensure shortage risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented as needed.

(b) For purposes of developing the water shortage contingency plan pursuant to subdivision (a), an 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.

(c) The urban water supplier shall make available the water shortage contingency plan prepared pursuant to this article to its customers and any city or county within which it provides water supplies no later than 30 days after adoption of the water shortage contingency plan.

(Repealed and added by Stats. 2018, Ch. 14, Sec. 32. (SB 606) Effective January 1, 2019.)

[10632.1](#) An urban water supplier shall conduct an annual water supply and demand assessment pursuant to subdivision (a) of Section 10632 and, on or before June 1 of each year, submit an annual water shortage assessment report to the department with information for anticipated shortage, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with the supplier's water shortage contingency plan. An urban water supplier that relies on imported water from the State Water Project or the Bureau of Reclamation shall submit its annual water supply and demand assessment within 14 days of receiving its final allocations, or by June 1 of each year, whichever is later.

(Added by Stats. 2018, Ch. 14, Sec. 33. (SB 606) Effective January 1, 2019.)

[10632.2](#) An urban water supplier shall follow, where feasible and appropriate, the prescribed procedures and implement determined shortage response actions in its water shortage contingency plan, as identified in subdivision

(a) of Section 10632, or reasonable alternative actions, provided that descriptions of the alternative actions are submitted with the annual water shortage assessment report pursuant to Section



10632.1. Nothing in this section prohibits an urban water supplier from taking actions not specified in its water shortage contingency plan, if needed, without having to formally amend its urban water management plan or water shortage contingency plan.

(Added by Stats. 2018, Ch. 14, Sec. 34. (SB 606) Effective January 1, 2019.)

[10632.3](#) It is the intent of the Legislature that, upon proclamation by the Governor of a state of emergency under the California Emergency Services Act (Chapter 7 (commencing with Section 8550) of Division 1 of Title 2 of the Government Code) based on drought conditions, the board defer to implementation of locally adopted water shortage contingency plans to the extent practicable.

(Added by Stats. 2018, Ch. 14, Sec. 35. (SB 606) Effective January 1, 2019.)

[10632.5](#) (a) In addition to the requirements of paragraph (3) of subdivision (a) of Section 10632, beginning January 1, 2020, the plan shall include a seismic risk assessment and mitigation plan to assess the vulnerability of each of the various facilities of a water system and mitigate those vulnerabilities.

(b) An urban water supplier shall update the seismic risk assessment and mitigation plan when updating its urban water management plan as required by Section 10621.

(c) An urban water supplier may comply with this section by submitting, pursuant to Section 10644, a copy of the most recent adopted local hazard mitigation plan or multihazard mitigation plan under the federal Disaster Mitigation Act of 2000 (Public Law 106-390) if the local hazard mitigation plan or multihazard mitigation plan addresses seismic risk.

(Added by Stats. 2015, Ch. 681, Sec. 1. (SB 664a Effective January 1, 2016.)

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

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

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

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

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

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

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

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



(Amended by Stats. 2009, Ch. 534, Sec. 2. (AB 1465) Effective January 1, 2010.)

[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.

(Added by Stats. 2001, Ch. 644, Sec. 3. Effective January 1, 2002.)



CHAPTER 3. Urban Water Management Plans [10620 - 10645] (Chapter 3 added by Stabs. 1983, Ch. 1009, Sec. 1.)

ARTICLE 2.5. Water Service Reliability [10635- 10635.] (Article 2.5 added by Stats. 1995, Ch. 854, Sec. 11.)

[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 long-term total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

(b) Every urban water supplier shall include, as part of its urban water management plan, a drought risk assessment for its water service to its customers as part of information considered in developing the demand management measures and water supply projects and programs to be included in the urban water management plan. The urban water supplier may conduct an interim update or updates to this drought risk assessment within the five-year cycle of its urban water management plan update. The drought risk assessment shall include each of the following:

- (1) A description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts five consecutive water years, starting from the year following when the assessment is conducted.
- (2) A determination of the reliability of each source of supply under a variety of water shortage conditions. This may include a determination that a particular source of water supply is fully reliable under most, if not all, conditions.
- (3) A comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.
- (4) Considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.

(c) 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.

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

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

(Amended by Stats. 2018, Ch. 14, Sec. 36. (SB 606) Effective January 1, 2019.)



CHAPTER 3. Urban Water Management Plans [10620 - 10645] (Chapter 3 added by Stabs. 1983, Ch. 1009, Sec. 1.)

ARTICLE 3. Adoption and Implementation of Plans [1 0640 - 10645] Article 3 added by Stats. 1983, Ch. 1009, Sec. 1.)

[10640.](#) (a) Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630). The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

(b) Every urban water supplier required to prepare a water shortage contingency plan shall prepare a water shortage contingency plan pursuant to Section 10632. The supplier shall likewise periodically review the water shortage contingency plan as required by paragraph (10) of subdivision (a) of Section 10632 and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

(Amended by Stats. 2018, Ch. 14, Sec. 37. (SB 606a Effective January 1, 20J 9.g

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

(Amended by Stats. 2018, Ch. 14, Sec. 38. (SB 606a Effective January 1, 20J 9.g

[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 both the plan and the water shortage contingency plan. Prior to adopting either, the urban water supplier shall make both the plan and the water shortage contingency plan available for public inspection and shall hold a public hearing or hearings thereon. Prior to any of these hearings, notice of the time and place of the hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of a hearing to any city or county within which the supplier provides water supplies. Notices by a local public agency pursuant to this section shall be provided pursuant to Chapter 17.5 (commencing with Section 7290) of Division 7 of Title 1 of the Government Code. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing or hearings, the plan or water shortage contingency plan shall be adopted as prepared or as modified after the hearing or hearings.

(Amended by Stats. 2018, Ch. 14, Sec. 39. (SB 606\$ Effective January 1, 70J 9.g

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

(Added by Stats. 1983, Ch. 1009, Sec. 1.)

[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. 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.

(2) The plan, or amendments to the plan, submitted to the department pursuant to paragraph (1)



shall be submitted electronically and shall include any standardized forms, tables, or displays specified by the department.

(b) If an urban water supplier revises its water shortage contingency plan, the supplier shall submit to the department a copy of its water shortage contingency plan prepared pursuant to subdivision (a) of Section 10632 no later than 30 days after adoption, in accordance with protocols for submission and using electronic reporting tools developed by the department.

(c) (1) (A) Notwithstanding Section 10231.5 of the Government Code, the department shall prepare and submit to the Legislature, on or before July 1, in the years ending in seven and two, a report summarizing the status of the plans and water shortage contingency plans adopted pursuant to this part. The report prepared by the department shall identify the exemplary elements of the individual plans and water shortage contingency plans. The department shall provide a copy of the report to each urban water supplier that has submitted its plan and water shortage contingency plan to the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans and water shortage contingency plans submitted pursuant to this part.

(B) The department shall prepare and submit to the board, on or before September 30 of each year, a report summarizing the submitted water supply and demand assessment results along with appropriate reported water shortage conditions and the regional and statewide analysis of water supply conditions developed by the department. As part of the report, the department shall provide a summary and, as appropriate, urban water supplier specific information regarding various shortage response actions implemented as a result of annual supplier-specific water supply and demand assessments performed pursuant to Section 10632.1.

(C) The department shall submit the report to the Legislature for the 2015 plans by July 1, 2017, and the report to the Legislature for the 2020 plans and water shortage contingency plans by July 1, 2022.

(2) A report to be submitted pursuant to subparagraph (A) of paragraph (1) shall be submitted in compliance with Section 9795 of the Government Code.

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

(Amended by Stats. 2018, Ch. 14, Sec. 40. (SB 606) Effective January 1, 2019.)

[10645.](#) (a) 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.

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

(Amended by Stats. 2018, Ch. 14, Sec. 41. (SB 606) Effective January 1, 2019.)



CHAPTER 4. Miscellaneous Provisions [1 0650 - 10657] (Chapter 4 added by :itats. 1 983, Ch. 1009, iec. 1.)

[10650](#) Any actions or proceedings, other than actions by the board, to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

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

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

(Amended by Stats. 2018, Ch. 14, Sec. 42. (SB 606) Effective January 1, 2019.)

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

(Amended by Stats. 2018, Ch. 14, Sec. 43. (SB 606) Effective January 1, 2019)

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

(Amended by Stats. 1995, Ch. 854, Sec. 6. Effective January 1, 1996.)

[10653](#) The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the board and the Public Utilities Commission, for the preparation of water management plans, water shortage contingency plans, or conservation plans; provided, that if the board or the Public Utilities Commission requires additional information concerning water conservation, drought response measures, or financial conditions to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan that complies with analogous federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

(Amended by Stats. 2018, Ch. 14, Sec. 45. (SB 606) Effective January 1, 2019)

[10654](#) An urban water supplier may recover in its rates the costs incurred in preparing its urban water management plan, its drought risk assessment, its water supply and demand assessment, and its water shortage contingency plan and implementing the reasonable water conservation measures included in either of the plans.

(Amended by Stats. 2018, Ch. 14, Sec. 44. (SB 606) Effective January 1, 2019)

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



(Amended by Stats. 1983, Ch. 1009, Sec. 1)

[10656](#) An urban water supplier is not eligible for a water grant or loan awarded or administered by the state unless the urban water supplier complies with this part.

(Amended by Stats. 2018, Ch. 14, Sec. 46. (SB 606) Effective January 1, 2019)

[10657](#) The department may adopt regulations regarding the definitions of water, water use, and reporting periods, and may adopt any other regulations deemed necessary or desirable to implement this part. In developing regulations pursuant to this section, the department shall solicit broad public participation from stakeholders and other interested persons.

(Amended by Stats. 2018, Ch. 14, Sec. 47. (SB 606) Effective January 1, 2019)

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Appendix B

DWR 2020 Urban Water Management Plan Tables

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Submittal Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020 *
<i>Add additional rows as needed</i>			
CA5710006	City of Woodland	16,767	10,504
TOTAL		16,767	10,504
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.			
NOTES: Volumes are in AF.			

Submittal Table 2-2: Plan Identification		
Select Only One	Type of Plan	Name of RUWMP or Regional Alliance <i>if applicable</i> (select from drop down list)
<input checked="" type="checkbox"/>	Individual UWMP	
	<input type="checkbox"/>	Water Supplier is also a member of a RUWMP
	<input type="checkbox"/>	Water Supplier is also a member of a Regional Alliance
<input type="checkbox"/>	Regional Urban Water Management Plan (RUWMP)	
NOTES:		

Submittal Table 2-3: Supplier Identification	
Type of Supplier (select one or both)	
<input type="checkbox"/>	Supplier is a wholesaler
<input checked="" type="checkbox"/>	Supplier is a retailer
Fiscal or Calendar Year (select one)	
<input checked="" type="checkbox"/>	UWMP Tables are in calendar years
<input type="checkbox"/>	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins (mm/dd)	
Units of measure used in UWMP * (select from drop down)	
Unit	AF
<i>* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>	
NOTES:	

Submittal Table 2-4 Retail: Water Supplier Information Exchange

The retail Supplier has informed the following wholesale supplier(s) of projected water use in accordance with Water Code Section 10631.

Wholesale Water Supplier Name

Add additional rows as needed

Woodland-Davis Clean Water Agency

NOTES:

Submittal Table 3-1 Retail: Population - Current and Projected

Population Served	2020	2025	2030	2035	2040	2045(<i>opt</i>)
	60,742	64,139	67,726	71,513	75,513	79,735

NOTES:

2020 population is obtained from the Department of Finance.

Future year populations were extrapolated based on a 1.09% growth rate calculated between the 2015 actual population (57,525) and 2020 actual population.

Submittal Table 4-1 Retail: Demands for Potable and Non-Potable¹ Water - Actual

Use Type	2020 Actual		
<p>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</p>	Additional Description (as needed)	Level of Treatment When Delivered Drop down list	Volume ²
Add additional rows as needed			
Single-Family		Drinking Water	4,860
Multi-Family		Drinking Water	1,381
Commercial		Drinking Water	1,647
Industrial		Drinking Water	170
Institutional/Governmental		Drinking Water	366
Landscape		Drinking Water	859
Losses	Unauthorized and Unmetered Water Losses	Drinking Water	1,070
TOTAL			10,353
<p>¹ Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4.</p>			
<p>² Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</p>			
<p>NOTES: Volumes are in AF.</p>			

Submittal Table 4-2 Retail: Use for Potable and Non-Potable¹ Water - Projected

Use Type	Additional Description (as needed)	Projected Water Use ² <i>Report To the Extent that Records are Available</i>				
		2025	2030	2035	2040	2045 (opt)
<p><u>Drop down list</u> May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool</p>						
Add additional rows as needed						
Single-Family		5,913	6,242	6,590	6,957	7,345
Multi-Family		1,681	1,774	1,873	1,977	2,087
Commercial		2,003	2,115	2,233	2,357	2,488
Industrial		206	218	230	243	256
Institutional/Governmental		446	471	497	524	554
Landscape		1,045	1,104	1,165	1,230	1,298
Losses		1,302	1,374	1,451	1,532	1,617
TOTAL		12,596	13,298	14,038	14,820	15,646
<p>¹ Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4. Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</p>						
<p>NOTES: Volumes are in AF.</p>						

Submittal Table 4-3 Retail: Total Water Use (Potable and Non-Potable)						
	2020	2025	2030	2035	2040	2045 (opt)
Potable Water, Raw, Other Non-potable <i>From Tables 4-1R and 4-2 R</i>	10,353	12,596	13,298	14,038	14,820	15,646
Recycled Water Demand ¹ <i>From Table 6-4</i>	151	602	677	677	677	0
Optional Deduction of Recycled Water Put Into Long-Term Storage ²						
TOTAL WATER USE	10,504	13,198	13,975	14,715	15,497	15,646
<p>¹ Recycled water demand fields will be blank until Table 6-4 is complete</p> <p>² Long term storage means water placed into groundwater or surface storage that is not removed from storage in the same year. Supplier <i>may</i> deduct recycled water placed in long-term storage from their reported demand. This value is manually entered into Table 4-3.</p>						
<p>NOTES: Volumes are in AF.</p>						

OPTIONAL Table 4-3 Retail: Total Water Use (Potable)						
	2020	2025	2030	2035	2040	2045 (opt)
Potable Water <i>From Tables 4-1R and 4-2 R</i>	10,353	12,596	13,298	14,038	14,820	15,646
TOTAL WATER USE	10,353	12,596	13,298	14,038	14,820	15,646
NOTES: Volumes are in AF.						

OPTIONAL Table 4-3 Retail: Total Water Use (Non-Potable)						
	2020	2025	2030	2035	2040	2045 (opt)
Recycled Water Demand ¹ <i>From Table 6-4</i>	151	602	677	677	677	
Raw and Other Non-potable <i>From Tables 4-1R and 4-2 R</i>	0	0	0	0	0	
Optional Deduction of Recycled Water Put Into Long-Term Storage ²						
TOTAL WATER USE	151	602	677	677	677	
¹ Recycled water demand fields will be blank until Table 6-4 is complete ² Long term storage means water placed into groundwater or surface storage that is not removed from storage in the same year. Supplier <i>may</i> deduct recycled water placed in long-term storage from their reported demand. This value is manually entered into Table 4-3.						
NOTES: Volumes are in AF. The recycled water projections are only shown through 2040.						

Submittal Table 4-4 Retail: Last Five Years of Water Loss Audit Reporting

Reporting Period Start Date (mm/yyyy)	Volume of Water Loss ^{1,2}
01/2015	485
01/2016	1,023
01/2017	976
01/2018	242
01/2019	1,521

¹ Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.

² **Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.**

NOTES: Volumes are in AF.

Submittal Table 4-5 Retail Only: Inclusion in Water Use Projections	
<p>Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) <i>Drop down list (y/n)</i></p>	No
<p>If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, or otherwise are utilized in demand projections are found.</p>	
<p>Are Lower Income Residential Demands Included In Projections? <i>Drop down list (y/n)</i></p>	Yes
<p>NOTES:</p>	

Submittal Table 5-1 Baselines and Targets Summary
From SB X7-7 Verification Form
Retail Supplier or Regional Alliance Only

Baseline Period	Start Year *	End Year *	Average Baseline GPCD*	Confirmed 2020 Target*
10-15 year	1995	2005	290	232
5 Year	2003	2007	277	

**All cells in this table should be populated manually from the supplier's SBX7-7 Verification Form and reported in Gallons per Capita per Day (GPCD)*

NOTES: Volumes are in AF.

Submittal Table 5-2: 2020 Compliance
From SB X7-7 2020 Compliance Form
Retail Supplier or Regional Alliance Only

2020 GPCD			2020 Confirmed Target GPCD*	Did Supplier Achieve Targeted Reduction for 2020? Y/N
Actual 2020 GPCD*	2020 TOTAL Adjustments*	Adjusted 2020 GPCD* <i>(Adjusted if applicable)</i>		
152	0	152	232	YES

**All cells in this table should be populated manually from the supplier's SBX7-7 2020 Compliance Form and reported in Gallons per Capita per Day (GPCD)*

NOTES: Volumes are in AF.

Submittal Table 6-1 Retail: Groundwater Volume Pumped						
<input type="checkbox"/>	Supplier does not pump groundwater. The supplier will not complete the table below.					
<input type="checkbox"/>	All or part of the groundwater described below is desalinated.					
Groundwater Type <i>Drop Down List</i> May use each category multiple times	Location or Basin Name	2016*	2017*	2018*	2019*	2020*
<i>Add additional rows as needed</i>						
Alluvial Basin	Yolo Subbasin of the Sacramento Valley Groundwater Basin	3,982	75	378	735	1,273
TOTAL		3,982	75	378	735	1,273
* <i>Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>						
<p>NOTES: Volumes are in AF.</p> <p>Total groundwater volumes include water pumped from ASR wells.</p> <p>For each year, total groundwater volumes were composed of 0% (2016), 0% (2017), 0.03% (2018), 99.98% (2019), and 99.83% (2020) ASR well water.</p>						

Submittal Table 6-2 Retail: Wastewater Collected Within Service Area in 2020

<input type="checkbox"/> There is no wastewater collection system. The supplier will not complete the table below.						
Percentage of 2020 service area covered by wastewater collection system <i>(optional)</i>						
Percentage of 2020 service area population covered by wastewater collection system <i>(optional)</i>						
Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? <i>Drop Down List</i>	Volume of Wastewater Collected from UWMP Service Area 2020 *	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? <i>Drop Down List</i>	Is WWTP Operation Contracted to a Third Party? <i>(optional)</i> <i>Drop Down List</i>
City of Woodland	Metered	4,587	City of Woodland	Water Pollution Control Facility	Yes	No
Total Wastewater Collected from Service Area in 2020:		4,587				
<i>* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3 .</i>						
NOTES: Volumes are in AF.						

Submittal Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2020

No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.

Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number (optional) ²	Method of Disposal <i>Drop down list</i>	Does This Plant Treat Wastewater Generated Outside the Service Area? <i>Drop down list</i>	Treatment Level <i>Drop down list</i>	2020 volumes ¹				
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area	Instream Flow Permit Requirement
Water Pollution Control Facility	Tule Canal	Large, unimproved channel		River or creek outfall	No	Tertiary	4,587	3,909	151	0	0
Total							4,587	3,909	151	0	0

¹ Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.
² If the **Wastewater Discharge ID Number** is not available to the UWMP preparer, access the SWRCB CIWQS regulated facility website at <https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=RegulatedFacility>

NOTES: Volumes are in AF.

Submittal Table 6-4 Retail: 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 Supplier Producing (Treating) the Recycled Water: Woodland Water Pollution Control Facility (WPCF)

Name of Supplier Operating the Recycled Water Distribution System: The City of Woodland

Supplemental Water Added in 2020 (volume) *Include units*: N/A

Source of 2020 Supplemental Water: N/A

Beneficial Use Type <i>Insert additional rows if needed.</i>	Potential Beneficial Uses of Recycled Water (Describe)	Amount of Potential Uses of Recycled Water (Quantity) <i>Include volume units¹</i>	General Description of 2020 Uses	Level of Treatment <i>Drop down list</i>	2020 ¹	2025 ¹	2030 ¹	2035 ¹	2040 ¹	2045 ¹ (opt)
Agricultural irrigation	N/A									
Landscape irrigation (exc golf courses)	City park/landscape & commercial landscape areas		Two City parks	Tertiary	47	152	227	227	227	
Golf course irrigation	N/A									
Commercial use	N/A									
Industrial use	N/A									
Geothermal and other energy production	Energy Production		Energy Production	Tertiary	104	450	450	450	450	
Seawater intrusion barrier	N/A									
Recreational impoundment	N/A									
Wetlands or wildlife habitat	N/A									
Groundwater recharge (IPR)	N/A									
Reservoir water augmentation (IPR)	N/A									
Direct potable reuse	N/A									
Other (Description Required)	N/A									
Total:					151	602	677	677	677	

2020 Internal Reuse

¹ Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

NOTES: Volumes are in AF.
Beneficial Use through energy production assumes that the commercial energy production plant in the City remains active.
2025 and beyond recycled landscape irrigation water amounts assume CA State is approved for completion of the City of Woodland's current recycled water piping.

Submittal Table 6-5 Retail: 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual

Recycled water was not used in 2015 nor projected for use in 2020. The supplier will not complete the table below. If recycled water was not used in 2020, and was not predicted to be in 2015, then check the box and do not complete the table.

Beneficial Use Type	2015 Projection for 2020 ¹	2020 Actual Use ¹
<i>Insert additional rows as needed.</i>		
Agricultural irrigation		
Landscape irrigation (exc golf courses)		47
Golf course irrigation		
Commercial use		
Industrial use		
Geothermal and other energy production	800	104
Seawater intrusion barrier		
Recreational impoundment		
Wetlands or wildlife habitat		
Groundwater recharge (IPR)		
Reservoir water augmentation (IPR)		
Direct potable reuse		
Other (Description Required)		
Total	800	151

¹ Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

NOTES: Volumes are in AF.

Submittal Table 6-6 Retail: Methods to Expand Future Recycled Water Use			
<input type="checkbox"/>	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use *
<i>Add additional rows as needed</i>			
Industrial Customers Demand	Add industrial customer's based need/proximity to the recycled water pipeline	2021-2025	Case Dependent
Phase II of Recycled Pipeline Project	Construct 9,700 linear-feet of 8-inch recycled water main and 100,000 gallon water tank for landscape irrigation	Dependent on Funding Availability	106
Total			106
*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.			
NOTES: Volumes are in AF.			

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

<input type="checkbox"/>	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.
<input type="checkbox"/>	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.

Provide page location of narrative in the UWMP

Name of Future Projects or Programs	Joint Project with other suppliers?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type <i>Drop Down List</i>	Expected Increase in Water Supply to Supplier* <i>This may be a range</i>
	<i>Drop Down List (y/n)</i>	<i>If Yes, Supplier Name</i>				

Add additional rows as needed

ASR Wells	No		Development of 2 ASR wells	One well by 2025 and one well by 2045	All Year Types	2,940 - 3,900
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***Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.**

NOTES: Volumes are in AF per year.
 The City expects to inject treated surface water between 120 and 180 days per year depending on how long Term 91 is in effect during the winter, leaving 185 days to 245 day for extraction. Assuming that two future ASR wells would each have an injection capacity of 1,000 gpm (1,569 AFY), the City would be able to inject between 1,060 AF to 1,590 AF of additional high quality surface water per year. Assuming the future ASR wells have an extraction capacity of 1,800 gpm, the expected increase in extracted water supply ranges from 2,940 AF to 3,900 AF with 185 days to 245 days of extraction per year respectively. Pumping beyond the stored surface water capacity would result in diminished water quality relative to the surface water but in the worst-case scenario (if Term 91 were in effect 365 days/year during the fifth year of drought, for example), the ASR wells could be pumped 365 days of the year 1,800 gpm each, resulting in up to 5,810 AF per year of additional supply from the two new ASR wells.

Submittal Table 6-8 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2020		
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		Actual Volume*	Water Quality Drop Down List	Total Right or Safe Yield* (optional)
Add additional rows as needed				
Groundwater (not desalinated)		2	Drinking Water	
Other	Groundwater from ASR wells	1,144	Drinking Water	
Surface water (not desalinated)		9,207	Drinking Water	
Recycled Water		151	Recycled Water	
Total		10,504		0
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>				
NOTES: Volumes are in AF. Actual volumes shown indicate volumes distributed (not pumped as is shown in DWR Table 6-1).				

OPTIONAL Table 6-8 Retail: Water Supplies — Actual Potable

Water Supply	Additional Detail on Water Supply	2020		
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		Actual Volume*	Water Quality Drop Down List	Total Right or Safe Yield* (optional)
Add additional rows as needed				
Groundwater (not desalinated)		2	Drinking Water	
Other	Groundwater from ASR wells	1,144	Drinking Water	
Surface water (not desalinated)		9,207	Drinking Water	
Total		10,353		0
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>				
NOTES: Volumes are in AF.				

OPTIONAL Table 6-8 Retail: Water Supplies — Actual Non-Potable

Water Supply	Additional Detail on Water Supply	2020		
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		Actual Volume*	Water Quality Drop Down List	Total Right or Safe Yield* (optional)
Add additional rows as needed				
Recycled Water		151	Recycled Water	
Total		151		0
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>				
NOTES: Volumes are in AF.				

Submittal Table 6-9 Retail: Water Supplies — Projected

Projected Water Supply * Report To the Extent Practicable											
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	2025		2030		2035		2040		2045 (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)
		Add additional rows as needed									
Groundwater (not desalinated)											
Surface water (not desalinated)	City's share of RWTF capacity	20,160		20,160		20,160		24,440		24,440	
Other	ASR Well Water										
Recycled Water		602		677		677		677			
Total		20,762	0	20,837	0	20,837	0	25,117	0	24,440	0
<p>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</p> <p>NOTES: Volumes are in AF.</p> <p>No volumes are shown for groundwater or ASR well water because surface water is expected to be sufficient to meet the City's demands. In addition, estimating the volume available from ASR well water and groundwater is difficult to determine. At times where surface water is not sufficient to meet demands, ASR well water and native groundwater are planned to be used.</p>											

OPTIONAL Table 6-9 Retail: Water Supplies — Projected Potable											
Water Supply	Additional Detail on Water Supply	Projected Water Supply* Report To the Extent Practicable									
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		2025		2030		2035		2040		2045 (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)
Add additional rows as needed											
Groundwater (not desalinated)											
Surface water (not desalinated)	City's share of RWTF capacity	20,160		20,160		20,160		24,440		24,440	
Other	ASR Well Water										
	Total	20,160	0	20,160	0	20,160	0	24,440	0	24,440	0
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>											
NOTES: Volumes are in AF. No volumes are shown for groundwater or ASR well water because surface water is expected to be sufficient to meet the City's demands. In addition, estimating the volume available from ASR well water and groundwater is difficult to determine. At times where surface water is not sufficient to meet demands, ASR well water and native groundwater are planned to be used.											

OPTIONAL Table 6-9 Retail: Water Supplies — Projected Non-Potable											
Water Supply	Additional Detail on Water Supply	Projected Water Supply* Report To the Extent Practicable									
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		2025		2030		2035		2040		2045 (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)
Add additional rows as needed											
Recycled Water		602		677		677		677			
	Total	602	0	677	0	677	0	677	0		
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>											
NOTES: Volumes are in AF.											

Urban Water Supplier:		City of Woodland						
Table O-1C: Recommended Energy Reporting - Multiple Water Delivery Products								
Enter Start Date for Reporting Period		1/1/2020	Urban Water Supplier Operational Control					
End Date		12/31/2020						
<input type="checkbox"/> Is upstream embedded in the values reported?			Water Management Process					
		Extract and Divert	Place into Storage	Conveyance	Treatment	Distribution	Total Utility	
Water Volume Units	Total Volume of Water Entering Process (volume units)		1273	0	0	0	10504	N/A
AF	Retail Potable Deliveries (%)		100%	0%	0%	0%	100%	
	Retail Non-Potable Deliveries (%)		0%	0%	0%	0%	0%	
	Wholesale Potable Deliveries (%)		0%	0%	0%	0%	0%	
	Wholesale Non-Potable Deliveries (%)		0%	0%	0%	0%	0%	
	Agricultural Deliveries (%)		0%	0%	0%	0%	0%	
	Environmental Deliveries (%)		0%	0%	0%	0%	0%	
	Other (%)		0%	0%	0%	0%	0%	
	Total Percentage [must equal 100%]		100%	0%	0%	0%	100%	N/A
	Energy Consumed (kWh)		377426.66	0	0	0	1372444.69	1749871
	Energy Intensity (kWh/vol. converted to MG)		909.9	0.0	0.0	0.0	401.0	N/A
Water Delivery Type			Production Volume (volume units defined above)	Total Utility (kWh/volume)	Net Utility (kWh/volume)			
	Retail Potable Deliveries		10353	169.0	169.0			
	Retail Non-Potable Deliveries		151	0.0	0.0			
	Wholesale Potable Deliveries		0	0.0	0.0			
	Wholesale Non-Potable Deliveries		0	0.0	0.0			
	Agricultural Deliveries		0	0.0	0.0			
	Environmental Deliveries		0	0.0	0.0			
	Other		0	0.0	0.0			
	All Water Delivery Types		10504	166.6	166.6			
Quantity of Self-Generated Renewable Energy								
0 kWh								
Data Quality (Estimate, Metered Data, Combination of Estimates and Metered Data)								
Metered Data								
Data Quality Narrative:								
The percentage of retail non-potable deliveries is shown as zero in this table even though the City does deliver a small amount of non-potable recycled water. This line item is shown as zero since there is no submeter at the City's WPCF to separate recycled water energy consumption from the wastewater plant's total electrical consumption.								

Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)

Year Type	Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020	Available Supplies if Year Type Repeats	
		<input type="checkbox"/>	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		<input checked="" type="checkbox"/>	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available *	% of Average Supply
Average Year	2019	9,795	100%
Single-Dry Year	2015	8,564	82%
Consecutive Dry Years 1st Year	2015	8,564	82%
Consecutive Dry Years 2nd Year	2016	9,011	86%
Consecutive Dry Years 3rd Year	2017	9,639	92%
Consecutive Dry Years 4th Year	2018	9,988	96%
Consecutive Dry Years 5th Year	2019	9,680	93%

Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.

***Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.**

NOTES: Volumes in AF.

Volume available for average year reflects the 5-year average from 2016-2020. The actual water usage in 2019 was actually 9,680 AF but 2019 was the year with usage closest to the average.

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

	2025	2030	2035	2040	2045 (<i>Opt</i>)
Supply totals (<i>autofill from Table 6-9</i>)	20,762	20,837	20,837	25,117	24,440
Demand totals (<i>autofill from Table 4-3</i>)	13,198	13,975	14,715	15,497	15,646
Difference	7,564	6,862	6,122	9,620	8,794

NOTES: Volumes are in AF.

OPTIONAL Table 7-2 Retail: Normal Year Supply and Demand Comparison - Potable					
	2025	2030	2035	2040	2045 (<i>Opt</i>)
Supply totals (<i>autofill from Table 6-9</i>)	20,160	20,160	20,160	24,440	24,440
Demand totals (<i>autofill from Table 4-3</i>)	12,596	13,298	14,038	14,820	15,646
Difference	7,564	6,862	6,122	9,620	8,794
NOTES: Volumes are in AF.					

OPTIONAL Table 7-2 Retail: Normal Year Supply and Demand Comparison - NonPotable					
	2025	2030	2035	2040	2045 (<i>Opt</i>)
Supply totals (<i>autofill from Table 6-9</i>)	602	677	677	677	
Demand totals (<i>autofill from Table 4-3</i>)	602	677	677	677	
Difference	0	0	0	0	
NOTES: Volumes are in AF.					

Submittal Table 7-3 Retail: Single Dry Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045 (Opt)
Supply totals*	20,762	20,837	20,837	25,117	24,440
Demand totals*	13,198	13,975	14,715	15,497	15,646
Difference	7,564	6,862	6,122	9,620	8,794
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>					
NOTES: Volumes are in AF.					

OPTIONAL Table 7-3 Retail: Single Dry Year Supply and Demand Comparison - Potable					
	2025	2030	2035	2040	2045 (Opt)
Supply totals*	20,160	20,160	20,160	24,440	24,440
Demand totals*	12,596	13,298	14,038	14,820	15,646
Difference	7,564	6,862	6,122	9,620	8,794
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>					
NOTES: Volumes are in AF.					

OPTIONAL Table 7-3 Retail: Single Dry Year Supply and Demand Comparison - Non-Potable					
	2025	2030	2035	2040	2045 (Opt)
Supply totals*	602	677	677	677	
Demand totals*	602	677	677	677	
Difference	0	0	0	0	
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>					
NOTES: Volumes are in AF.					

Submittal Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison

		2025*	2030*	2035*	2040*	2045* (Opt)
First year	Supply totals	20,762	20,837	20,837	25,117	24,440
	Demand totals	13,198	13,975	14,715	15,497	15,646
	Difference	7,564	6,862	6,122	9,620	8,794
Second year	Supply totals	20,762	20,837	20,837	25,117	24,440
	Demand totals	13,198	13,975	14,715	15,497	15,646
	Difference	7,564	6,862	6,122	9,620	8,794
Third year	Supply totals	20,762	20,837	20,837	25,117	24,440
	Demand totals	13,198	13,975	14,715	15,497	15,646
	Difference	7,564	6,862	6,122	9,620	8,794
Fourth year	Supply totals	20,762	20,837	20,837	25,117	24,440
	Demand totals	13,198	13,975	14,715	15,497	15,646
	Difference	7,564	6,862	6,122	9,620	8,794
Fifth year	Supply totals	20,762	20,837	20,837	25,117	24,440
	Demand totals	13,198	13,975	14,715	15,497	15,646
	Difference	7,564	6,862	6,122	9,620	8,794

**Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: Volumes are in AF.

OPTIONAL Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison - Potable

		2025*	2030*	2035*	2040*	2045* (Opt)
First year	Supply totals	20,160	20,160	20,160	24,440	24,440
	Demand totals	12,596	13,298	14,038	14,820	15,646
	Difference	7,564	6,862	6,122	9,620	8,794
Second year	Supply totals	20,160	20,160	20,160	24,440	24,440
	Demand totals	12,596	13,298	14,038	14,820	15,646
	Difference	7,564	6,862	6,122	9,620	8,794
Third year	Supply totals	20,160	20,160	20,160	24,440	24,440
	Demand totals	12,596	13,298	14,038	14,820	15,646
	Difference	7,564	6,862	6,122	9,620	8,794
Fourth year	Supply totals	20,160	20,160	20,160	24,440	24,440
	Demand totals	12,596	13,298	14,038	14,820	15,646
	Difference	7,564	6,862	6,122	9,620	8,794
Fifth year	Supply totals	20,160	20,160	20,160	24,440	24,440
	Demand totals	12,596	13,298	14,038	14,820	15,646
	Difference	7,564	6,862	6,122	9,620	8,794

**Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: Volumes are in AF.

OPTIONAL Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison - Non-Potable

		2025*	2030*	2035*	2040*	2045* (Opt)
First year	Supply totals	602	677	677	677	
	Demand totals	602	677	677	677	
	Difference	0	0	0	0	
Second year	Supply totals	602	677	677	677	
	Demand totals	602	677	677	677	
	Difference	0	0	0	0	
Third year	Supply totals	602	677	677	677	
	Demand totals	602	677	677	677	
	Difference	0	0	0	0	
Fourth year	Supply totals	602	677	677	677	
	Demand totals	602	677	677	677	
	Difference	0	0	0	0	
Fifth year	Supply totals	602	677	677	677	
	Demand totals	602	677	677	677	
	Difference	0	0	0	0	

**Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: Volumes are in AF.

Submittal Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)

2021	Total
Total Water Use	13,198
Total Supplies	36,665
Surplus/Shortfall w/o WSCP Action	23,467
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	23,467
Resulting % Use Reduction from WSCP action	0%

2022	Total
Total Water Use	13,198
Total Supplies	34,649
Surplus/Shortfall w/o WSCP Action	21,451
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	21,451
Resulting % Use Reduction from WSCP action	0%

2023	Total
Total Water Use	13,198
Total Supplies	32,633
Surplus/Shortfall w/o WSCP Action	19,435
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	19,435
Resulting % Use Reduction from WSCP action	0%

2024	Total
Total Water Use	13,198
Total Supplies	30,617
Surplus/Shortfall w/o WSCP Action	17,419
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	17,419
Resulting % Use Reduction from WSCP action	0%

2025	Total
Total Water Use	13,198
Total Supplies	28,601
Surplus/Shortfall w/o WSCP Action	15,403
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	15,403
Resulting % Use Reduction from WSCP action	0%

OPTIONAL Table 7-5 Five-year Drought Risk Assessment Tables to address Water Code Section 10635(b) - Potable

2021	Total
Total Water Use - <i>Potable</i>	12,596
Total Supplies - <i>Potable</i>	32,756
Surplus/Shortfall w/o WSCP Action	20,160
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	20,160
Resulting % Use Reduction from WSCP action	0%
2022	
Total	Total
Total Water Use [Use Worksheet]	12,596
Total Supplies [Supply Worksheet]	30,740
Surplus/Shortfall w/o WSCP Action	18,144
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	18,144
Resulting % Use Reduction from WSCP action	0%
2023	
Total	Total
Total Water Use [Use Worksheet]	12,596
Total Supplies [Supply Worksheet]	28,724
Surplus/Shortfall w/o WSCP Action	16,128
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	16,128
Resulting % Use Reduction from WSCP action	0%
2024	
Total	Total
Total Water Use [Use Worksheet]	12,596
Total Supplies [Supply Worksheet]	26,708
Surplus/Shortfall w/o WSCP Action	14,112
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	
Resulting % Use Reduction from WSCP action	0%
2025	
Total	Total
Total Water Use [Use Worksheet]	12,596
Total Supplies [Supply Worksheet]	24,692
Surplus/Shortfall w/o WSCP Action	12,096
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	12,096
Resulting % Use Reduction from WSCP action	0%

OPTIONAL Table 7-5 Five-year Drought Risk Assessment Tables to address Water Code Section 10635(b) - Non-Potable

2021	Total
Total Water Use - Non-potable	602
Total Supplies	3,909
Surplus/Shortfall w/o WSCP Action	3,307
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	3,307
Resulting % Use Reduction from WSCP action	0%

2022	Total
Total Water Use [Use Worksheet]	602
Total Supplies [Supply Worksheet]	3,909
Surplus/Shortfall w/o WSCP Action	3,307
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	3,307
Resulting % Use Reduction from WSCP action	0%

2023	Total
Total Water Use [Use Worksheet]	602
Total Supplies [Supply Worksheet]	3,909
Surplus/Shortfall w/o WSCP Action	3,307
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	3,307
Resulting % Use Reduction from WSCP action	0%

2024	Total
Total Water Use [Use Worksheet]	602
Total Supplies [Supply Worksheet]	3,909
Surplus/Shortfall w/o WSCP Action	3,307
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	3,307
Resulting % Use Reduction from WSCP action	0%

2025	Total
Total Water Use [Use Worksheet]	602
Total Supplies [Supply Worksheet]	3,909
Surplus/Shortfall w/o WSCP Action	3,307
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	3,307
Resulting % Use Reduction from WSCP action	0%

**Submittal Table 8-1
Water Shortage Contingency Plan Levels**

Shortage Level	Percent Shortage Range	Shortage Response Actions <i>(Narrative description)</i>
1	Up to 10%	<ul style="list-style-type: none"> - City to encourage water customers and users to implement best water management and conservation practices, including avoiding water waste as defined in WMC Section 13.32.030 and following the City's landscape requirements (WMC Section 17.112) and State Model Water Efficient Landscape Ordinance (23 California Code of Regulations Section 490), except when they are replaced by more restrictive conditions imposed by the water stages in WMC Section 13.32.030. - All City water customers shall reduce water use by 10% (Stage 1) from their normal water demand. - Hosing off sidewalks, driveways, and other hardscapes is prohibited. - Water hoses shall be equipped with a control nozzle capable of completely shutting off the flow of water except when positive pressure is applied. - Water shall be served upon request at restaurants.
2	Up to 20%	<ul style="list-style-type: none"> - Shortage Response Actions in Level 1 as shown in the row above - All City water customers shall reduce water use by 20% (Stage 2) from their normal water demand. - Outdoor watering is restricted to three days per week.
3	Up to 30%	<ul style="list-style-type: none"> - Shortage Response Actions in Level 2 as shown in row above - All City water customers shall reduce water use by 30% (Stage 3) from their normal water demand. - Outdoor watering is restricted to two days per week. - All nonresidential users are to reduce irrigation by 40% for existing landscapes. - The use of running water from a hose, pipe, or faucet for the purpose of cleaning buildings and outdoor hardscape surfaces is prohibited. - Boats and vehicles shall be washed only at commercial washing facilities equipped with water recycling equipment or by use of a bucket and a hose equipped with a self-closing valve that requires operating positive pressure to activate the flow of water. - New or expanded landscaping is limited to drought tolerant trees, shrubs, and ground cover. No new turf grass shall be planted, hydroseeded, or laid.
4	Up to 40%	<ul style="list-style-type: none"> - Shortage Response Actions in Level 3 as shown in row above - All City water customers shall reduce water use by 40% (Stage 4) from their normal water demand. - Irrigation of any landscaping except trees or drought tolerant plantings is prohibited. - Boats, vehicles, and equipment shall be washed at commercial establishments that recycle water. - No new water service connections or commitments for new water service shall be put in place until the City has returned to at least stage 2, water warning restrictions. - Filling pools and spas is prohibited.
5	Up to 50%	<ul style="list-style-type: none"> - Shortage Response Actions in Level 4 as shown in row above - All City water customers shall reduce water use by 50% (Stage 5) from their normal water demand.
6	>50%	<ul style="list-style-type: none"> - Shortage Response Actions in Level 5 as shown in row above - All City water customers shall reduce water use by 50% (Stage 6) from their normal water demand.

NOTES:

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Submittal Table 8-2: Demand Reduction Actions

Shortage Level	Demand Reduction Actions <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.</i>	How much is this going to reduce the shortage gap? Include units used (volume type or percentage)	Additional Explanation or Reference (optional)	Penalty, Charge, or Other Enforcement? <i>For Retail Suppliers Only Drop Down List</i>
<i>Add additional rows as needed</i>				
0	Expand Public Information Campaign	Reduce water use up to 20%	Encourage water users to reduce water waste	No
0	Offer Water Use Surveys	Reduce water use up to 0.5%	Increase awareness of our AquaHawk program to help customers monitor their daily/hourly water use and set up leak alerts.	No
0	Reduce System Water Loss	Reduce water use up to 35%	Annual construction projects are done to repair and replace water distribution infrastructure.	No
0	Landscape - Restrict or prohibit runoff from landscape irrigation	Reduce water use up to 0.5%		Yes
0	Other - Customers must repair leaks breaks, and malfunctions in a timely manner	Reduce water use up to 0.5%		Yes
0	Landscape - Other landscape restriction or prohibition	Reduce water use up to 5%		Yes
1	Other	Reduce water use up to 3%	Encourage water users to reduce water waste	Yes
1	Other	Reduce water use up to 3%	City water customers shall reduce water use by 10%	Yes
1	Other - Prohibit use of potable water for washing hard surfaces	Reduce water use up to 5%		Yes
1	Other-Require automatic shut of hoses	Reduce water use up to 0.5%		Yes
1	CII - Restaurants may only serve water upon request	Reduce water use up to 0.5%		Yes
2	Other	Reduce water use up to 3%	Encourage water users to reduce water waste	Yes
2	Other	Reduce water use up to 3%	City water customers shall reduce water use by 20%	Yes
2	Landscape - Other landscape restriction or prohibition	Reduce water use up to 5%		Yes
2	CII - Other CII restriction or prohibition	Reduce water use up to 5%		Yes
2	Water Features - Restrict water use for decorative water features, such as fountains	Reduce water use up to 0.5%		Yes
2	Other - Prohibit use of potable water for washing hard surfaces	Reduce water use up to 5%		Yes
2	Other - Require automatic shut of hoses	Reduce water use up to 0.5%		Yes
2	CII - Restaurants may only serve water upon request	Reduce water use up to 0.5%		Yes
2	Landscape - Limit landscape irrigation to specific times	Reduce water use up to 25%	Outdoor watering restricted to 3 days per week.	Yes
3	Other	Reduce water use up to 3%	Encourage water users to reduce water waste	Yes
3	Other	Reduce water use up to 3%	City water customers shall reduce water use by 30%	Yes
3	Other - Prohibit use of potable water for washing hard surfaces	Reduce water use up to 5%		Yes
3	Other - Require automatic shut of hoses	Reduce water use up to 0.5%		Yes
3	CII - Restaurants may only serve water upon request	Reduce water use up to 0.5%		Yes
3	Landscape - Limit landscape irrigation to specific times	Reduce water use up to 25%	Outdoor watering restricted to 2 days per week.	Yes
3	Landscape - Other landscape restriction or prohibition	Reduce water use up to 5%	All nonresidential users are to reduce irrigation by 40% for existing landscapes	Yes
3	Other	Reduce water use up to 0.5%	Prohibit vehicle washing unless use of a bucket and hose equipped with a self-closing valve.	Yes
3	Landscape - Prohibit certain types of landscape irrigation	Reduce water use up to 0.5%		Yes
3	Landscape - Other landscape restriction or prohibition	Reduce water use up to 5%	New or expanding landscapes is limited to drought tolerant trees, shrubs and ground cover. No new turf grass shall be placed, hydroseeded or laid	Yes
3	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Reduce water use up to 5%		Yes
3	Pools - Allow filling of swimming pools only when an appropriate cover is in place.	Reduce water use up to 0.5%		Yes
3	CII - Other CII restriction or prohibition	Reduce water use up to 0.5%	Operators of hotels, motels, and other commercial establishments offering lodging shall post in each room and site a notice of water shortage condition, approved by the Public Works Director	Yes
3	Water Features - Restrict water use for decorative water features, such as fountains	Reduce water use up to 0.5%		Yes
4	Other	Reduce water use up to 3%	Encourage water users to reduce water waste	Yes
4	Other	Reduce water use up to 3%	City water customers shall reduce water use by 40%	Yes
4	Other - Prohibit use of potable water for washing	Reduce water use up to 5%		Yes
4	Other - Require automatic shut of hoses	Reduce water use up to 0.5%		Yes

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4	CII - Restaurants may only serve water upon request	Reduce water use up to 0.5%		Yes
4	Landscape - Prohibit certain types of landscape irrigation	Reduce water use up to 0.5%	Irrigation of any landscaping except trees or drought tolerant plantings is prohibited	Yes
4	Landscape - Other landscape restriction or prohibition	Reduce water use up to 5%	All nonresidential users are to reduce irrigation by 40% for existing landscapes	Yes
4	Other - Prohibit use of potable water for washing	Reduce water use up to 5%		Yes
4	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Reduce water use up to 5%		Yes
4	Landscape - Other landscape restriction or prohibition	Reduce water use up to 5%	New or expanding landscapes is limited to drought tolerant trees, shrubs and ground cover. No new turf grass shall be placed, hydroseeded or laid	Yes
4	CII - Other CII restriction or prohibition	Reduce water use up to 0.5%	Operators of hotels, motels, and other commercial establishments offering lodging shall post in each room and site a notice of water shortage condition, approved by the Public Works Director	Yes
4	Water Features - Restrict water use for decorative water features, such as fountains	Reduce water use up to 0.5%		Yes
4	Other	Reduce water use up to 3%	No new water service connections or commitments for new water service shall be put in place	Yes
4	Other water feature or swimming pool restriction	Reduce water use up to 0.5%	Filling pools and spas is prohibited	Yes
5	Other	Reduce water use up to 3%	Encourage water users to avoid water waste	Yes
5	Other	Reduce water use up to 3%	City water customers shall reduce water use by 50%	Yes
5	Other - Prohibit use of potable water for washing	Reduce water use up to 5%		Yes
5	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Reduce water use up to 5%		Yes
5	Landscape - Other landscape restriction or prohibition	Reduce water use up to 5%	New or expanding landscapes is limited to drought tolerant trees, shrubs and ground cover. No new turf grass shall be placed, hydroseeded or laid	Yes
5	CII - Other CII restriction or prohibition	Reduce water use up to 0.5%	Operators of hotels, motels, and other commercial establishments offering lodging shall post in each room and site a notice of water shortage condition, approved by the Public Works Director	Yes
5	Water Features - Restrict water use for decorative water features, such as fountains	Reduce water use up to 0.5%		Yes
5	Other	Reduce water use up to 3%	No new water service connections or commitments for new water service shall be put in place	Yes
5	Other water feature or swimming pool restriction	Reduce water use up to 0.5%	Filling pools and spas is prohibited	Yes
6	Other	Reduce water use up to 3%	Encourage water users to avoid water waste	Yes
6	Other	Reduce water use up to 3%	City water customers shall reduce water use by 60%	Yes
6	Other - Prohibit use of potable water for washing	Reduce water use up to 5%		Yes
6	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Reduce water use up to 5%		Yes
6	Landscape - Other landscape restriction or prohibition	Reduce water use up to 5%	New or expanding landscapes is limited to drought tolerant trees, shrubs and ground cover. No new turf grass shall be placed, hydroseeded or laid	Yes
6	CII - Other CII restriction or prohibition	Reduce water use up to 0.5%	Operators of hotels, motels, and other commercial establishments offering lodging shall post in each room and site a notice of water shortage condition, approved by the Public Works Director	Yes
6	Other	Reduce water use up to 3%	No new water service connections or commitments for new water service shall be put in place	Yes
6	Other water feature or swimming pool restriction	Reduce water use up to 0.5%	Filling pools and spas is prohibited	Yes
6	Water Features - Restrict water use for decorative water features, such as fountains	Reduce water use up to 0.5%		Yes

NOTES:

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Submittal Table 8-3: Supply Augmentation and Other Actions			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool</i>	How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i>	Additional Explanation or Reference <i>(optional)</i>
<i>Add additional rows as needed</i>			
0	Expand Public Information Campaign	Up to the shortage gap	Purpose is to help boost and support water conservation measures at all times and increase outreach as shortage gap increases
0	Other Actions (describe)	Up to the shortage gap	Other actions = Water use surveys: Utility customers are able to monitor daily/hourly water use and set up leak alerts through AquaHawk, the City's water use dashboard.
0	Other Actions (describe)	Up to the shortage gap	Other actions = Provide water conservation rebates: The City currently offers rebates for mulch (up to \$100), rain barrels (up to 2 purchases, \$75 each) and weather-based irrigation controller rebates (up to \$150).
0	Other Actions (describe)	Up to the shortage gap	Other actions = Water main replacement projects: The City does annual construction projects to repair and replace water distribution infrastructure.
1	Expand Public Information Campaign	Up to the shortage gap	10% water demand reduction anticipated
1	New recycled water	Up to the shortage gap	Expand recycled water
1	Other Purchases	Up to the shortage gap	Pursue water purchases (WDCWA)
1	Stored Emergency Supply	Up to the shortage gap	Stored ASR water
2	Expand Public Information Campaign	Up to the shortage gap	20% water demand reduction anticipated
2	Other Purchases	Up to the shortage gap	Pursue water purchases (WDCWA)
2	Stored Emergency Supply	Up to the shortage gap	Stored ASR water
3	Expand Public Information Campaign	Up to the shortage gap	30% water demand reduction anticipated
3	Other Purchases	Up to the shortage gap	Pursue water purchases (WDCWA)
3	Stored Emergency Supply	Up to the shortage gap	Stored ASR water
4	Expand Public Information Campaign	Up to the shortage gap	40% water demand reduction anticipated
4	Other Purchases	Up to the shortage gap	Pursue water purchases (WDCWA)
4	Stored Emergency Supply	Up to the shortage gap	Stored ASR water
5	Expand Public Information Campaign	Up to the shortage gap	50% water demand reduction anticipated
5	Other Purchases	Up to the shortage gap	Pursue water purchases (WDCWA)
5	Stored Emergency Supply	Up to the shortage gap	Stored ASR water
6	Expand Public Information Campaign	Up to the shortage gap	60% water demand reduction anticipated
6	Other Purchases	Up to the shortage gap	Pursue water purchases (WDCWA)
6	Stored Emergency Supply	Up to the shortage gap	Stored ASR water
NOTES:			

Submittal Table 10-1 Retail: Notification to Cities and Counties

City Name	60 Day Notice	Notice of Public Hearing
<i>Add additional rows as needed</i>		
City of Davis	Yes	Yes
City of West Sacramento	Yes	Yes
City of Woodland	Yes	Yes
County Name <i>Drop Down List</i>	60 Day Notice	Notice of Public Hearing
<i>Add additional rows as needed</i>		
Yolo County	Yes	Yes
NOTES:		

DWR 2020 Urban Water Management Plan Checklist

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Appendix C UWMP Checklist



Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (For Agency Review Use)
X	X	Chapter 1	10615	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and Overview	Executive Summary
X	X	Chapter 1	10630.5	Each plan shall include a simple description of the supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a supplier may also choose to include a simple description at the beginning of each chapter.	Summary	Executive Summary
X	X	Section 2.2	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.	Plan Preparation	Section 2.1
X	X	Section 2.6	10620(d)(2)	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.	Plan Preparation	Section 2.5
X	X	Section 2.6.2	10642	Provide supporting documentation that the water supplier has encouraged 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 and contingency plan.	Plan Preparation	Section 2.5.2
X		Section 2.6, Section 6.1	10631(h)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) - if any - with water use projections from that source.	System Supplies	Section 2.5.1
	X	N/A	10631(h)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	N/A; City is not a Wholesale Supplier
X	X	Section 3.1	10631(a)	Describe the water supplier service area.	System Description	Section 3.2
X	X	Section 3.3	10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3.3
X	X	Section 3.4	10631(a)	Provide population projections for 2025, 2030, 2035, 2040 and optionally 2045.	System Description	Section 3.4.1
X	X	Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the supplier's water management planning.	System Description	Section 3.4.2
X	X	Sections 3.4 and 5.4	10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Sections 3.4 and 5.3

Appendix C

UWMP Checklist



Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (For Agency Review Use)
X	X	Section 3.5	10631(a)	Describe the land uses within the service area.	System Description	Section 3.5
X	X	Section 4.2	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.2
X	X	Section 4.3	10631(d)(3)(C)	Retail suppliers shall provide data to show the distribution loss standards were met.	System Water Use	Section 4.3
X	X	Section 4.2.6	10631(d)(4)(A)	In projected water use, include estimates of water savings from adopted codes, plans, and other policies or laws.	System Water Use	Section 4.5
X	X	Section 4.2.6	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System Water Use	Section 4.2.3
X	optional	Section 4.3.2.4	10631(d)(3)(A)	Report the distribution system water loss for each of the 5 years preceding the plan update.	System Water Use	Section 4.3
X	optional	Section 4.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 4.4
X	X	Section 4.5	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System Water Use	Section 4.6
X		Chapter 5	10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	Baselines and Targets	Section 5.5 and 5.6
X		Chapter 5	10608.24(a)	Retail suppliers shall meet their water use target by December 31, 2020.	Baselines and Targets	Section 5.6
	X	Section 5.1	10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	N/A; City is not a Wholesale Supplier
X		Section 5.2	10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	N/A; City is not adjusting its compliance GPCD (Section 5.6)
X		Section 5.5	10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5-year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 5.6
X		Section 5.5 and Appendix E	10608.4	Retail suppliers shall report on their compliance in meeting their water use targets. The data shall be reported using a standardized form in the SBX7-7 2020 Compliance Form.	Baselines and Targets	Section 5.6

Appendix C

UWMP Checklist



Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (For Agency Review Use)
X	X	Sections 6.1 and 6.2	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought.	System Supplies	Section 6.2 and Section 7.1.3
X	X	Sections 6.1	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, <i>including changes in supply due to climate change.</i>	System Supplies	Sections 6.2, 6.2.12.1, 7.1.3
X	X	Section 6.1	10631(b)(2)	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System Supplies	Section 6.2
X	X	Section 6.1.1	10631(b)(3)	Describe measures taken to acquire and develop planned sources of water.	System Supplies	Section 6.2.1, 6.2.10, 6.2.11
X	X	Section 6.2.8	10631(b)	Identify and quantify the existing and planned sources of water available for 2020, 2025, 2030,2035, 2040 and optionally 2045.	System Supplies	Section 6.2.11
X	X	Section 6.2	10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.2.2
X	X	Section 6.2.2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	Section 6.2.2.2
X	X	Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System Supplies	Section 6.2.2.1
X	X	Section 6.2.2	10631(b)(4)(B)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Section 6.2.3
X	X	Section 6.2.2.1	10631(b)(4)(B)	For unadjudicated basins, indicate whether or not the department has identified the basin as a high or medium priority. Describe efforts by the supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	System Supplies	Section 6.2.2.2.1
X	X	Section 6.2.2.4	10631(b)(4)(C)	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	System Supplies	Section 6.2.3.1
X	X	Section 6.2.2	10631(b)(4)(D)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Section 6.2.11
X	X	Section 6.2.7	10631(c)	Describe the opportunities for exchanges or transfers of water on a short-term or long- term basis.	System Supplies	Section 6.2.9

Appendix C UWMP Checklist



Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (For Agency Review Use)
X	X	Section 6.2.5	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.	System Supplies (Recycled Water)	Section 6.2.7.2
X	X	Section 6.2.5	10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.2.7.3
X	X	Section 6.2.5	10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.2.7.4
X	X	Section 6.2.5	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.	System Supplies (Recycled Water)	Section 6.2.7.4
X	X	Section 6.2.5	10633(f)	Describe the actions 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.	System Supplies (Recycled Water)	Section 6.2.7.4
X	X	Section 6.2.5	10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.2.7.4
X	X	Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.2.8
X	X	Section 6.2.5	10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area with quantified amount of collection and treatment and the disposal methods.	System Supplies (Recycled Water)	Section 6.2.7.2
X	X	Section 6.2.8, Section 6.3.7	10631(f)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and for a period of drought lasting 5 consecutive water years.	System Supplies	Section 6.2.10
X	X	Section 6.4 and Appendix O	10631.2(a)	The UWMP must include energy information, as stated in the code, that a supplier can readily obtain.	System Suppliers, Energy Intensity	Section 6.3
X	X	Section 7.2	10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	Section 7.1.1
X	X	Section 7.2.4	10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Section 7.3
X	X	Section 7.3	10635(a)	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water	Water Supply Reliability Assessment	Section 7.1.3

Appendix C UWMP Checklist



Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (For Agency Review Use)
				supply sources available to the water supplier with the total projected water use over the next 20 years.		
X	X	Section 7.3	10635(b)	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	Water Supply Reliability Assessment	Section 7.2
X	X	Section 7.3	10635(b)(1)	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts 5 consecutive years.	Water Supply Reliability Assessment	Section 7.2.1
X	X	Section 7.3	10635(b)(2)	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water Supply Reliability Assessment	Section 7.1.3
X	X	Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.	Water Supply Reliability Assessment	Section 7.1.3.3
X	X	Section 7.3	10635(b)(4)	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water Supply Reliability Assessment	Section 7.1.1 and Section 6.2.12
X	X	Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water Shortage Contingency Planning	Section 8.2 and Appendix I
X	X	Chapter 8	10632(a)(1)	Provide the analysis of water supply reliability (from Chapter 7 of Guidebook) in the WSCP	Water Shortage Contingency Planning	Appendix I: Section 1.0
X	X	Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the water shortage contingency plan to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water Shortage Contingency Planning	Appendix I: Section 2.0
X	X	Section 8.2	10632(a)(2)(A)	Provide the written decision-making process and other methods that the supplier will use each year to determine its water reliability.	Water Shortage Contingency Planning	Appendix I: Section 2.1
X	X	Section 8.2	10632(a)(2)(B)	Provide data and methodology to evaluate the supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Water Shortage Contingency Planning	Appendix I: Section 1.0
X	X	Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10, 20, 30, 40, 50 percent shortage and greater than 50 percent shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water Shortage Contingency Planning	Appendix I: Section 3.0

Appendix C UWMP Checklist



Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (For Agency Review Use)
X	X	Section 8.3	10632(a)(3)(B)	Suppliers with an existing water shortage contingency plan that uses different water shortage levels must cross reference their categories with the six standard categories.	Water Shortage Contingency Planning	Appendix I: Section 3.0
X	X	Section 8.4	10632(a)(4)(A)	Suppliers with water shortage contingency plans that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water Shortage Contingency Planning	Appendix I: Section 4.2
X	X	Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water Shortage Contingency Planning	Appendix I: Section 4.1
X	X	Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water Shortage Contingency Planning	Appendix I: Section 4.3
X	X	Section 8.4	10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions are appropriate to local conditions.	Water Shortage Contingency Planning	Appendix I: Section 4.1
X	X	Section 8.4	10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water Shortage Contingency Planning	Appendix I: Section 4.1
X	X	Section 8.4.6	10632.5	The plan shall include a seismic risk assessment and mitigation plan.	Water Shortage Contingency Plan	Section 8.3
X	X	Section 8.5	10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water Shortage Contingency Planning	Appendix I: Section 5.0
X	X	Section 8.5 and 8.6	10632(a)(5)(B) 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water Shortage Contingency Planning	Appendix I: Section 5.0
X		Section 8.6	10632(a)(6)	Retail supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water Shortage Contingency Planning	Appendix I: Section 6.0
X	X	Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the supplier to enforce shortage response actions.	Water Shortage Contingency Planning	Appendix I: Section 7.0
X	X	Section 8.7	10632(a)(7)(B)	Provide a statement that the supplier will declare a water shortage emergency Water Code Chapter 3.	Water Shortage Contingency Planning	Appendix I: Section 7.0
X	X	Section 8.7	10632(a)(7)(C)	Provide a statement that the supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water Shortage Contingency Planning	Appendix I: Section 2.1, 5.1, 6.0, and 7.0

Appendix C UWMP Checklist



Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (For Agency Review Use)
X	X	Section 8.8	10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Appendix I: Section 8.0
X	X	Section 8.8	10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Appendix I: Section 8.0
X		Section 8.8	10632(a)(8)(C)	Retail suppliers must describe the cost of compliance with Water Code Chapter 3.3: Excessive Residential Water Use During Drought	Water Shortage Contingency Planning	Appendix I: Section 8.0
X		Section 8.9	10632(a)(9)	Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water Shortage Contingency Planning	Appendix I: Section 10.1
X		Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water Shortage Contingency Planning	Appendix I: Section 11.0
X	X	Sections 8.12 and 10.4	10635(c)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 30 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Appendix I: Section 12.0
X	X	Section 8.14	10632(c)	Make available the Water Shortage Contingency Plan to customers and any city or county where it provides water within 30 after adopted the plan.	Water Shortage Contingency Planning	Appendix I: Section 12.0
	X	Sections 9.1 and 9.3	10631(e)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	N/A; City is not a Wholesale supplier
X		Sections 9.2 and 9.3	10631(e)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Section 9.1
X		Chapter 10	10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan Adoption, Submittal, and Implementation	Section 10.3
X	X	Section 10.2.1	10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Reported in Table 10-1.	Plan Adoption, Submittal, and Implementation	Section 10.2 and Appendix D

Appendix C UWMP Checklist



Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (For Agency Review Use)
X	X	Section 10.4	10621(f)	Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021.	Plan Adoption, Submittal, and Implementation	Section 10.4
X	X	Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the urban water supplier made the plan and contingency plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan and contingency plan.	Plan Adoption, Submittal, and Implementation	Section 10.4 and Appendix D
X	X	Section 10.2.2	10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Section 10.2.1
X	X	Section 10.3.2	10642	Provide supporting documentation that the plan and contingency plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 10.3.2 and Appendix K
X	X	Section 10.4	10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 10.4
X	X	Section 10.4	10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	Section 10.4
X	X	Sections 10.4.1 and 10.4.2	10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Section 10.4
X	X	Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5
X	X	Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its water shortage contingency plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5
X	X	Section 10.6	10621(c)	If supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan Adoption, Submittal, and Implementation	N/A
X	X	Section 10.7.2	10644(b)	If revised, submit a copy of the water shortage contingency plan to DWR within 30 days of adoption.	Plan Adoption, Submittal, and Implementation	Section 10.6



Appendix D

Agency and Public Notices

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Daily Democrat

DailyDemocrat.com · Woodland, CA

711 Main Street

Woodland, CA 95695

530-406-6223

legals@dailydemocrat.com

2130710

WOODLAND, CITY OF - LEGALS

ATTN: ACCOUNTS PAYABLE

300 FIRST ST

WOODLAND, CA 95695

.....

Account Number: 2130710

Ad Order Number: 0006576522

Customer's Reference 21-19 NOPH Update on Water Management Plan and Water Shortage
/ PO Number: / 21-19 NOPH Update on Water Management Plan and Water Shortage

Publication: Woodland Daily Democrat

Publication Dates: 05/18/2021, 05/25/2021

Amount: \$361.68

Payment Amount: \$0.00

NOTICE OF PUBLIC HEARING

NOTICE IS GIVEN HERewith that the City Council of the City of Woodland, at its regularly scheduled meeting to be held on **June 1, 2021, at 6:00 PM** in the City Council Chambers, 300 First Street, City Hall, Woodland, CA, will hold the following public hearing on an Update of Urban Water Management Plan (UWMP) and Water Shortage Contingency Plan (WSCP).

California law requires the City of Woodland to review and update its Urban Water Management Plan (UWMP) every five years. Additionally, the California Department of Water Resources has imposed new requirements for urban water suppliers to adopt a Water Shortage Contingency Plan (WSCP). The City Council will hold a public hearing to consider proposed revisions and updates to its UWMP for 2020-2025 and its WSCP.

PUBLIC COMMENTS: The City Council will hold its meeting by teleconference pursuant to the Governor's Executive Order N-29-20. The meeting will be held via teleconference and the public will participate via teleconference. The public is encouraged to watch the City Council meeting live on Woodland TV Channel 20, by going to the City of Woodland website: www.cityofwoodland.org/meetings, or by joining the Zoom meeting described below.

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<https://zoom.us/j/99759026181>

Or Telephone, Dial: 669-900-6833

Webinar ID:

997 5902 6181

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The City of Woodland's draft 2020 UWMP and WSCP can be viewed at www.cityofwoodland.org/2020UWMPpublicdraft.

If you have any questions about the City's UWMP or WSCP, please contact Matt Cohen, Associate Engineer, at matt.cohen@cityofwoodland.org.

Date: May 18, 2021

Ana B. Gonzalez,

City Clerk

Woodland Daily Democrat

711 Main Street
Woodland, CA 95695
530-406-6223
legals@dailydemocrat.com

2130710

WOODLAND, CITY OF - LEGALS
ATTN: ACCOUNTS PAYABLE
300 FIRST ST
WOODLAND, CA 95695

PROOF OF PUBLICATION (2015.5 C.C.P.)

STATE OF CALIFORNIA
COUNTY OF YOLO

19 NOPH Update on Water Management Plan and Wa

I am a citizen of the United States. I am over the age of eighteen years and not a party to or interested in the above-entitled matter. I am the Legal Advertising Clerk of the printer and publisher of The Daily Democrat, a newspaper published in the English language in the City of Woodland, County of Yolo, State of California.

I declare that the Daily Democrat is a newspaper of general circulation as defined by the laws of the State of California as determined by this court's order dated June 30, 1952 in the action entitled In the Matter of the Ascertainment and Establishment of the Standing of The Daily Democrat as a Newspaper of General Circulation, Case Number 12659. Said order states "The Daily Democrat" has been established, printed and published in the City of Woodland, County of Yolo, State of California; That it is a newspaper published daily for the dissemination of local and telegraphic news and intelligence of general character and has a bona fide subscription list of paying subscribers; and...THEREFORE, IT IS ORDERED, ADJUDGED AND DECREED:...That "The Daily Democrat" is a newspaper of general circulation for the City of Woodland, County of Yolo, California. Said order has not been revoked.

I declare that this notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

05/18/2021, 05/25/2021

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated at Woodland, California, this
25th day of May 2021



(Signature) Jill Teer

Legal No. **0006576522**

CITY OF WOODLAND

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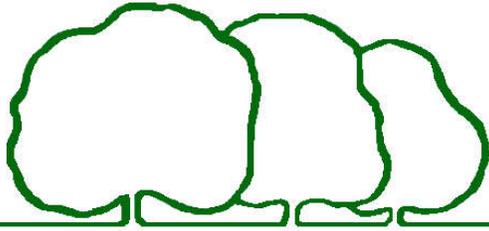
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If you have any questions about the City's UWMP or WSCP, please contact Matt Cohen, Associate Engineer, at matt.cohen@cityofwoodland.org.

Date: May 18, 2021
Ana B. Gonzalez,
City Clerk

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City of Woodland

Community Development Engineering 300 First Street, Woodland, CA 95695 (530) 661-5820 www.cityofwoodland.org

May 17, 2021

Mr. Michael Webb
City Manager
City of Davis
23 Russell Blvd
Davis, CA 95616

SUBJECT: Notice of Public Hearing for the 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Mr. Webb:

California law requires the City of Woodland to review and update its Urban Water Management Plan (UWMP) every five years. Additionally, the California Department of Water Resources has imposed new requirements for urban water suppliers to adopt a Water Shortage Contingency Plan (WSCP). The City Council will hold a virtual public hearing **on June 1, 2021, at 6:00 PM** by teleconference to consider proposed revisions and updates to its UWMP for 2020-2025 and to its WSCP.

PUBLIC COMMENTS: The City Council will hold its meeting by teleconference pursuant to the Governor's Executive Order N-29-20. The meeting will be held via teleconference and the public will participate via teleconference. The public is encouraged to listen to the City Council meeting live on Woodland TV Channel 20 and also by going to the City of Woodland www.cityofwoodland.org/meetings.

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If you have any questions about the City's UWMP or WSCP, you may do so by writing to the undersigned or by email to the City at matt.cohen@cityofwoodland.org. Thank you.

Sincerely,



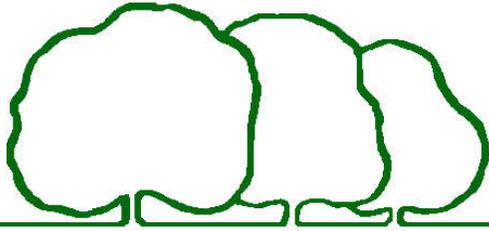
Tim Busch, P.E.

Principal Utilities Civil Engineer

tim.busch@cityofwoodland.org

300 First St.

Woodland, CA 95695



City of Woodland

Community Development Engineering 300 First Street, Woodland, CA 95695 (530) 661-5820 www.cityofwoodland.org

May 17, 2021

Mr. Aaron Laurel
City Manager
City of West Sacramento
1110 W Capitol Ave., 3rd Floor
West Sacramento, CA 95691

SUBJECT: Notice of Public Hearing for of 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Mr. Laurel:

California law requires the City of Woodland to review and update its Urban Water Management Plan (UWMP) every five years. Additionally, the California Department of Water Resources has imposed new requirements for urban water suppliers to adopt a Water Shortage Contingency Plan (WSCP). The City Council will hold a public hearing on June 1, 2021, at 6:00 PM by teleconference to consider proposed revisions and updates to its UWMP for 2020-2025 and its WSCP.

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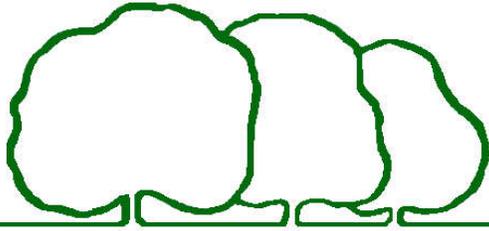
Tim Busch, P.E.

Principal Utilities Civil Engineer

tim.busch@cityofwoodland.org

300 First St.

Woodland, CA 95695



City of Woodland

Community Development Engineering 300 First Street, Woodland, CA 95695 (530) 661-5820 www.cityofwoodland.org

May 17, 2021

Mr. Ken Hiatt
City Manager
City of Woodland
300 First St
Woodland, CA 95695

SUBJECT: Notice of Public Hearing for the of 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Mr. Hiatt:

California law requires the City of Woodland to review and update its Urban Water Management Plan (UWMP) every five years. Additionally, the California Department of Water Resources has imposed new requirements for urban water suppliers to adopt a Water Shortage Contingency Plan (WSCP). The City Council will hold a public hearing on June 1, 2021, at 6:00 PM by teleconference to consider proposed revisions and updates to its UWMP for 2020-2025 and its WSCP.

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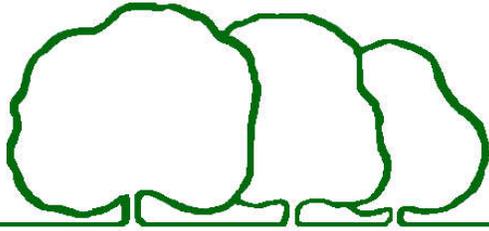
Tim Busch, P.E.

Principal Utilities Civil Engineer

tim.busch@cityofwoodland.org

300 First St.

Woodland, CA 95695



City of Woodland

Community Development Engineering 300 First Street, Woodland, CA 95695 (530) 661-5820 www.cityofwoodland.org

May 17, 2021

Mr. Mike Hall
General Manager
Reclamation District 2035
P.O. Box 8624
Woodland, CA 95776

SUBJECT: Notice of Public Hearing for the of 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Mr. Hall:

California law requires the City of Woodland to review and update its Urban Water Management Plan (UWMP) every five years. Additionally, the California Department of Water Resources has imposed new requirements for urban water suppliers to adopt a Water Shortage Contingency Plan (WSCP). The City Council will hold a public hearing on June 1, 2021, at 6:00 PM by teleconference to consider proposed revisions and updates to its UWMP for 2020-2025 and its WSCP.

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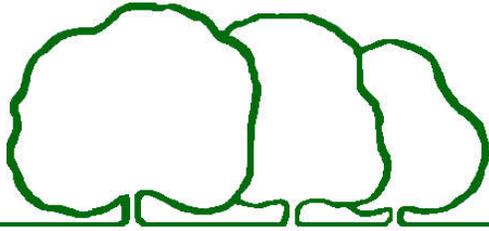
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tim.busch@cityofwoodland.org

300 First St.

Woodland, CA 95695



City of Woodland

Community Development Engineering 300 First Street, Woodland, CA 95695 (530) 661-5820 www.cityofwoodland.org

May 17, 2021

Ms. Camille Kirk
Director of Sustainability and Campus Sustainability Planner
Office of Sustainability, University of California Davis
436 Mrak Hall
One Shields Avenue
Davis, CA 95616

SUBJECT: Notice of Public Hearing for the of 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Ms. Kirk:

California law requires the City of Woodland to review and update its Urban Water Management Plan (UWMP) every five years. Additionally, the California Department of Water Resources has imposed new requirements for urban water suppliers to adopt a Water Shortage Contingency Plan (WSCP). The City Council will hold a public hearing on June 1, 2021, at 6:00 PM by teleconference to consider proposed revisions and updates to its UWMP for 2020-2025 and its WSCP.

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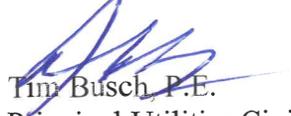
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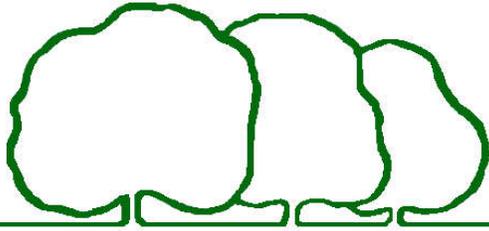
Tim Busch, P.E.

Principal Utilities Civil Engineer

tim.busch@cityofwoodland.org

300 First St.

Woodland, CA 95695



City of Woodland

Community Development Engineering 300 First Street, Woodland, CA 95695 (530) 661-5820 www.cityofwoodland.org

May 17, 2021

Mr. Will Arnold
Chair, Board of Directors
Woodland-Davis Clean Water Agency
855 County Road 102
Woodland, CA 95695

SUBJECT: Notice of Public Hearing for the 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Mr. Arnold:

California law requires the City of Woodland to review and update its Urban Water Management Plan (UWMP) every five years. Additionally, the California Department of Water Resources has imposed new requirements for urban water suppliers to adopt a Water Shortage Contingency Plan (WSCP). The City Council will hold a public hearing on June 1, 2021, at 6:00 PM by teleconference to consider proposed revisions and updates to its UWMP for 2020-2025 and its WSCP.

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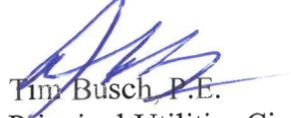
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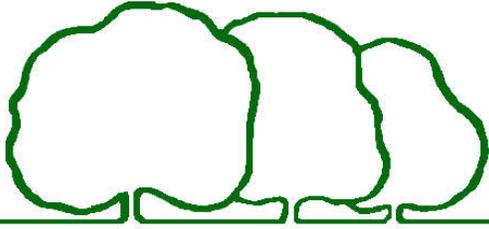
Tim Busch, P.E.

Principal Utilities Civil Engineer

tim.busch@cityofwoodland.org

300 First St.

Woodland, CA 95695



City of Woodland

Community Development Engineering 300 First Street, Woodland, CA 95695 (530) 661-5820 www.cityofwoodland.org

May 17, 2021

Ms. Jeanette Wrysinski
Westside Sacramento River IRWM Group

SUBJECT: Notice of Public Hearing for the 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Ms. Wrysinski:

California law requires the City of Woodland to review and update its Urban Water Management Plan (UWMP) every five years. Additionally, the California Department of Water Resources has imposed new requirements for urban water suppliers to adopt a Water Shortage Contingency Plan (WSCP). The City Council will hold a public hearing on June 1, 2021, at 6:00 PM by teleconference to consider proposed revisions and updates to its UWMP for 2020-2025 and its WSCP.

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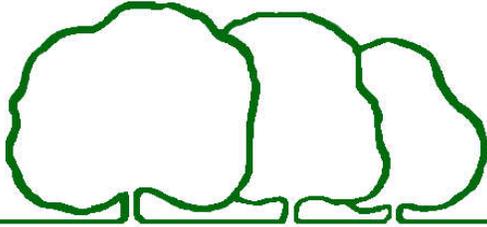
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May 17, 2021

Mr. Phil Hogan
Woodland Chamber of Commerce, Water Task Force

SUBJECT: Notice of Public Hearing for the 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Mr. Hogan:

California law requires the City of Woodland to review and update its Urban Water Management Plan (UWMP) every five years. Additionally, the California Department of Water Resources has imposed new requirements for urban water suppliers to adopt a Water Shortage Contingency Plan (WSCP). The City Council will hold a public hearing on June 1, 2021, at 6:00 by teleconference to consider proposed revisions and updates to its UWMP for 2020-2025 and its WSCP.

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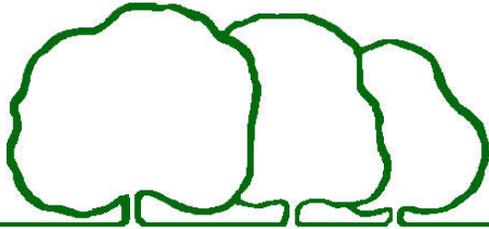
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May 17, 2021

Mr. Roger Cornwell
Chair, Board Officer
Water Resources Association of Yolo County
34274 State Highway 16
Woodland, CA 95695

SUBJECT: Notice of Public Hearing for the 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Mr. Cornwell:

California law requires the City of Woodland to review and update its Urban Water Management Plan (UWMP) every five years. Additionally, the California Department of Water Resources has imposed new requirements for urban water suppliers to adopt a Water Shortage Contingency Plan (WSCP). The City Council will hold a public hearing on June 1, 2021, at 6:00 PM by teleconference to consider proposed revisions and updates to its UWMP for 2020-2025 and its WSCP.

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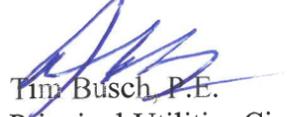
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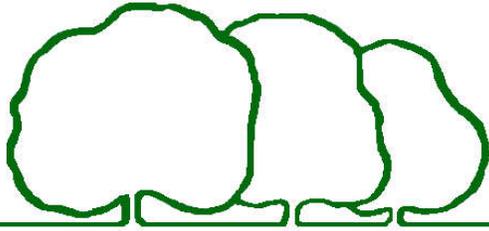
Tim Busch, P.E.

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May 17, 2021

Mr. Tim O'Halloran
General Manager
Yolo County Flood Control & Water Conservation District
34274 State Highway 16
Woodland, CA 95695

SUBJECT: Notice of Public Hearing for the 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Mr. O'Halloran:

California law requires the City of Woodland to review and update its Urban Water Management Plan (UWMP) every five years. Additionally, the California Department of Water Resources has imposed new requirements for urban water suppliers to adopt a Water Shortage Contingency Plan (WSCP). The City Council will hold a public hearing on June 1, 2021, at 6:00 by teleconference to consider proposed revisions and updates to its UWMP for 2020-2025 and its WSCP.

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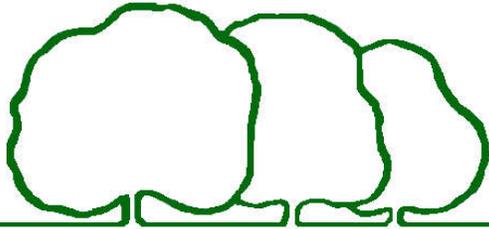
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May 17, 2021

Ms. Jianmin Huang
Land Use Supervisor
Environmental Health Division
292 W Beamer St.
Woodland, CA 95695

SUBJECT: Notice of Public Hearing for the 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Ms. Huang:

California law requires the City of Woodland to review and update its Urban Water Management Plan (UWMP) every five years. Additionally, the California Department of Water Resources has imposed new requirements for urban water suppliers to adopt a Water Shortage Contingency Plan (WSCP). The City Council will hold a public hearing on June 1, 2021, at 6:00 PM by teleconference to consider proposed revisions and updates to its UWMP for 2020-2025 and its WSCP.

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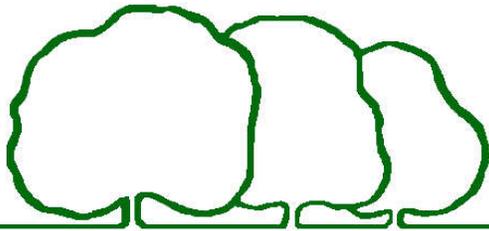
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Woodland, CA 95695



City of Woodland

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May 17, 2021

Ms. Denise Sagara
Executive Director
Yolo County Farm Bureau
P.O. Box 1556 69 Kentucky Avenue
Woodland, CA 95776

SUBJECT: Notice of Public Hearing for the 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Ms. Sagara:

California law requires the City of Woodland to review and update its Urban Water Management Plan (UWMP) every five years. Additionally, the California Department of Water Resources has imposed new requirements for urban water suppliers to adopt a Water Shortage Contingency Plan (WSCP). The City Council will hold a public hearing on June 1, 2021, at 6:00 PM by teleconference to consider proposed revisions and updates to its UWMP for 2020-2025 and its WSCP.

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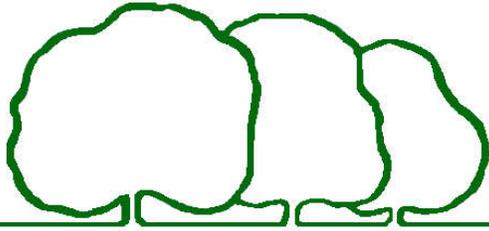
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May 17, 2021

Ms. Kristin Sicke
Executive Officer
Yolo Subbasin Groundwater Agency

SUBJECT: Notice of Public Hearing for the 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Ms. Sicke:

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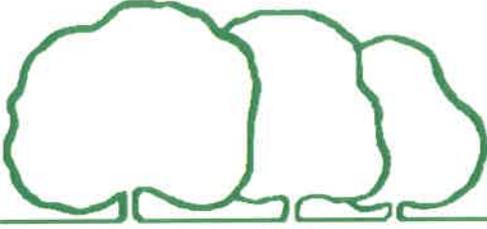
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March 24, 2021

Mr. Michael Webb
City Manager
City of Davis
23 Russell Blvd
Davis, CA 95616

SUBJECT: Preparation of 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Mr. Webb:

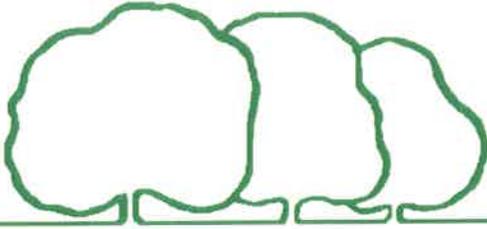
The City of Woodland is currently in the process of updating its Urban Water Management Plan (UWMP) and Water Shortage Contingency Plan (WSCP). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. Further, changes to the Act since 2015 require updates to the City's WSCP. The City's 2015 UWMP was adopted in June 2016, and its 2020 UWMP is required to be submitted to the California Department of Water Resources by July 1, 2021.

The UWMP is a planning document and a source document which reports, describes and evaluates water deliveries and uses, water supply sources and conservation efforts. The WSCP provides a plan for response to various water supply shortage conditions. As an urban water supplier, the City of Woodland coordinates with water management agencies, relevant public agencies and other water suppliers on the preparation of the UWMP and WSCP updates. The City will be reviewing the UWMP and WSCP and will make amendments and updates, as appropriate.

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March 24, 2021

Mr. Ken Hiatt
City Manager
City of Woodland
300 First St
Woodland, CA 95695

SUBJECT: Preparation of 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Mr. Webb:

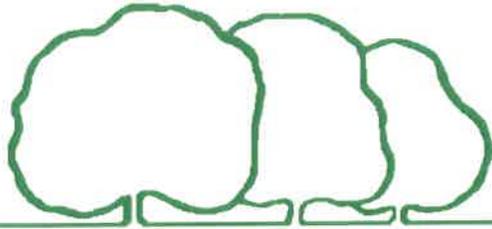
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March 24, 2021

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Westside Sacramento River IRWM Group

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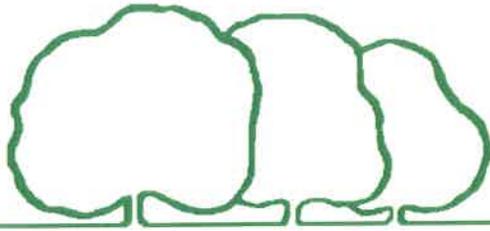
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Sincerely,

Tim Busch, P.E.
Principal Utilities Civil Engineer
Tim.busch@cityofwoodland.org
300 First St.
Woodland, CA 95695



City of Woodland

Community Development Engineering 300 First Street, Woodland, CA 95695 (530) 661-5820 www.cityofwoodland.org

March 24, 2021

Mr. Mike Hall
General Manager
Reclamation District 2035
P.O. Box 8624
Woodland, CA 95776

SUBJECT: Preparation of 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Mr. Hall:

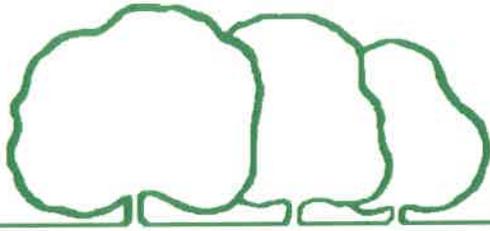
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March 24, 2021

Ms. Camille Kirk
Director of Sustainability and Campus Sustainability Planner
Office of Sustainability, University of California Davis
436 Mrak Hall
One Shields Avenue
Davis, CA 95616

SUBJECT: Preparation of 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Ms. Kirk:

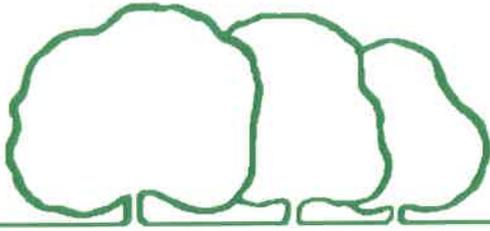
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Woodland, CA 95695



City of Woodland

Community Development Engineering 300 First Street, Woodland, CA 95695 (530) 661-5820 www.cityofwoodland.org

March 24, 2021

Mr. Will Arnold
Chair, Board of Directors
Woodland-Davis Clean Water Agency
855 County Road 102
Woodland, CA 95695

SUBJECT: Preparation of 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Mr. Arnold:

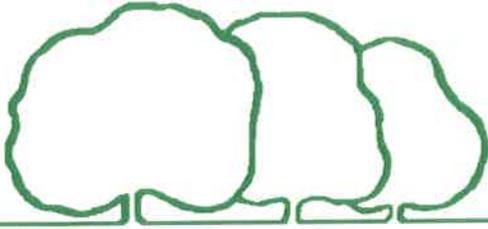
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City of Woodland

Community Development Engineering 300 First Street, Woodland, CA 95695 (530) 661-5820 www.cityofwoodland.org

March 24, 2021

Mr. Aaron Laurel
City Manager
City of West Sacramento
1110 W Capitol Ave., 3rd Floor
West Sacramento, CA 95691

SUBJECT: Preparation of 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Mr. Laurel:

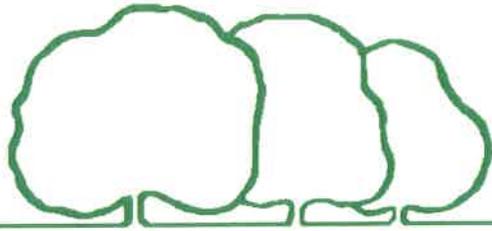
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Woodland, CA 95695



City of Woodland

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March 24, 2021

Mr. Phil Hogan
Woodland Chamber of Commerce, Water Task Force

SUBJECT: Preparation of 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Mr. Hogan:

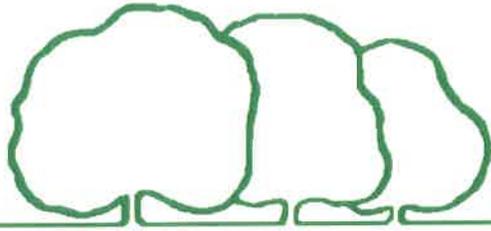
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City of Woodland

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March 24, 2021

Mr. Roger Cornwell
Chair, Board Officer
Water Resources Association of Yolo County
34274 State Highway 16
Woodland, CA 95695

SUBJECT: Preparation of 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Mr. Cornwell:

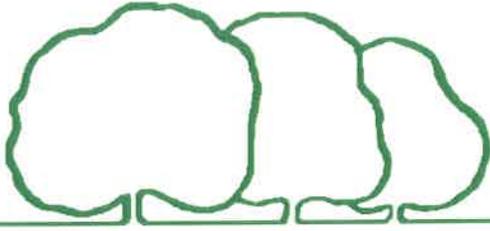
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City of Woodland

Community Development Engineering 300 First Street, Woodland, CA 95695 (530) 661-5820 www.cityofwoodland.org

March 25, 2021

Mr. Tim O'Halloran
General Manager
Yolo County Flood Control & Water Conservation District
34274 State Highway 16
Woodland, CA 95695

SUBJECT: Preparation of 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Mr. O'Halloran:

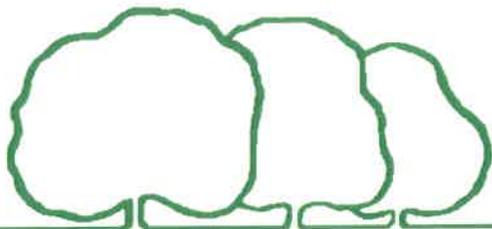
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March 24, 2021

Ms. Denise Sagara
Executive Director
Yolo County Farm Bureau
P.O. Box 1556 69 Kentucky Avenue
Woodland, CA 95776

SUBJECT: Preparation of 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Ms. Sagara:

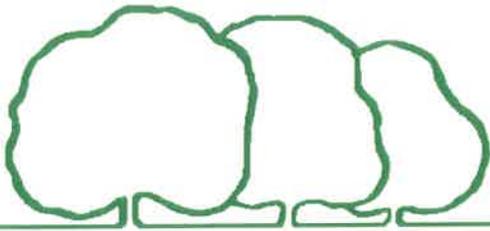
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City of Woodland

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March 24, 2021

Ms. Jianmin Huang
Land Use Supervisor
Environmental Health Division
292 W Beamer St.
Woodland, CA 95695

SUBJECT: Preparation of 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Ms. Huang:

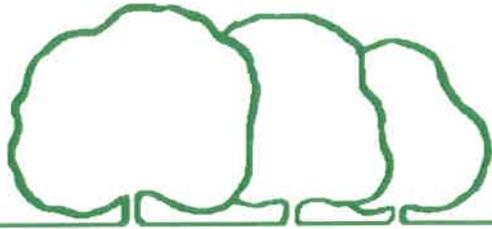
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March 24, 2021

Ms. Kristin Sicke
Executive Officer
Yolo Subbasin Groundwater Agency

SUBJECT: Preparation of 2020 Urban Water Management Plan and Water Shortage Contingency Plan

Dear Ms. Sicke:

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Principal Utilities Civil Engineer
Tim.busch@cityofwoodland.org
300 First St.
Woodland, CA 95695

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Appendix E

Distribution System Water Loss Audit

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AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0
American Water Works Association.
Copyright © 2014, All Rights Reserved.

?	Click to access definition
+	Click to add a comment

Water Audit Report for: City of Woodland (CA5710006)
Reporting Year: 2019 1/2019 - 12/2019

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

WATER SUPPLIED

		----- Enter grading in column 'E' and 'J' ----->				Master Meter and Supply Error Adjustments				
Volume from own sources:	+	?	5	194.332	MG/Yr	+	?	8	830.444	MG/Yr
Water imported:	+	?	7	3,672.916	MG/Yr	+	?	5		MG/Yr
Water exported:	+	?	n/a	0.000	MG/Yr	+	?			MG/Yr

WATER SUPPLIED: 3,036.804 MG/Yr

AUTHORIZED CONSUMPTION

Billed metered:	+	?	8	2,539.589	MG/Yr	Pcnt:	Value:			
Billed unmetered:	+	?	10	0.778	MG/Yr	<input type="radio"/>	<input checked="" type="radio"/>	0.759	MG/Yr	
Unbilled metered:	+	?	n/a		MG/Yr	Use buttons to select percentage of water supplied OR value				
Unbilled unmetered:	+	?	5	0.759	MG/Yr	<input type="radio"/>	<input type="radio"/>			

AUTHORIZED CONSUMPTION: 2,541.126 MG/Yr

WATER LOSSES (Water Supplied - Authorized Consumption)

495.678 MG/Yr

Apparent Losses

Unauthorized consumption: 7.592 MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies: 28.246 MG/Yr

Systematic data handling errors: 6.349 MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 42.187 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 453.491 MG/Yr

WATER LOSSES: 495.678 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 496.437 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:						
	+	?	9	283.3	miles	
Number of <u>active AND inactive</u> service connections:	+	?	9	16,753		
Service connection density:	?			59	conn./mile main	

Are customer meters typically located at the curbside or property line? Yes

Average length of customer service line: 56.4 psi (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: 56.4 psi

COST DATA

Total annual cost of operating water system:						
	+	?	5	\$25,727,082	\$/Year	
Customer retail unit cost (applied to Apparent Losses):	+	?	9	\$4.24	\$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	+	?	5	\$3,431.03	\$/Million gallons	<input type="checkbox"/> Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 71 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

- 1: Water imported
- 2: Total annual cost of operating water system
- 3: Variable production cost (applied to Real Losses)

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SB X7-7 Verification and Compliance Forms

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SB X7-7 Table 0: Units of Measure Used in 2020 UWMP**(select one from the drop down list)*

Acre Feet

**The unit of measure must be consistent throughout the UWMP, as reported in Submittal Table 2-3.*

NOTES:

SB X7-7 Table 2: Method for 2020 Population Estimate**Method Used to Determine 2020 Population***(may check more than one)***1. Department of Finance (DOF) or American Community Survey (ACS)****2. Persons-per-Connection Method****3. DWR Population Tool****4. Other**
DWR recommends pre-review

NOTES:

SB X7-7 Table 3: 2020 Service Area Population	
2020 Compliance Year Population	
2020	60,742
NOTES: Population is from the Department of Finance.	

SB X7-7 Table 4: 2020 Gross Water Use							
Compliance Year 2020	2020 Volume Into Distribution System <i>This column will remain blank until SB X7-7 Table 4-A is completed.</i>	2020 Deductions					2020 Gross Water Use
		Exported Water *	Change in Dist. System Storage* (+/-)	Indirect Recycled Water <i>This column will remain blank until SB X7-7 Table 4-B is completed.</i>	Water Delivered for Agricultural Use*	Process Water <i>This column will remain blank until SB X7-7 Table 4-D is completed.</i>	
	10,353			-		-	10,353
* Units of measure (AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.							
NOTES: Volumes are in AF.							

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment
Complete one table for each source.

Name of Source		Groundwater	
This water source is (check one):			
<input checked="" type="checkbox"/>	The supplier's own water source		
<input type="checkbox"/>	A purchased or imported source		
Compliance Year 2020	Volume Entering Distribution System ¹	Meter Error Adjustment ² Optional (+/-)	Corrected Volume Entering Distribution System
	1,146	-	1,146
¹ Units of measure (AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.			
² Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document			
NOTES: Volumes are in AF.			

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment
Complete one table for each source.

Name of Source		Surface Water	
This water source is (check one):			
<input type="checkbox"/>	The supplier's own water source		
<input checked="" type="checkbox"/>	A purchased or imported source		
Compliance Year 2020	Volume Entering Distribution System ¹	Meter Error Adjustment ² Optional (+/-)	Corrected Volume Entering Distribution System
	9,207		9,207
¹ Units of measure (AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.			
² Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document			
NOTES: Volumes are in AF.			

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment
Complete one table for each source.

Name of Source		Recycled Water	
This water source is (check one):			
<input checked="" type="checkbox"/>	The supplier's own water source		
<input type="checkbox"/>	A purchased or imported source		
Compliance Year 2020	Volume Entering Distribution System ¹	Meter Error Adjustment ² Optional (+/-)	Corrected Volume Entering Distribution System
			0
¹ Units of measure (AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.			
² Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document			
NOTES: Recycled water was not in use until February 2017.			

SB X7-7 Table 5: 2020 Gallons Per Capita Per Day (GPCD)		
2020 Gross Water <i>Fm SB X7-7 Table 4</i>	2020 Population <i>Fm SB X7-7 Table 3</i>	2020 GPCD
10,353	60,742	152
NOTES:		

SB X7-7 Table 9: 2020 Compliance							
Actual 2020 GPCD ¹	Optional Adjustments to 2020 GPCD				Adjusted 2020 GPCD ¹ <i>(Adjusted if applicable)</i>	2020 Confirmed Target GPCD ^{1,2}	Did Supplier Achieve Targeted Reduction for 2020?
	Enter "0" if Adjustment Not Used			TOTAL Adjustments ¹			
	Extraordinary Events ¹	Weather Normalization ¹	Economic Adjustment ¹				
152	-	-	-	-	152	232	YES
¹ All values are reported in GPCD ² 2020 Confirmed Target GPCD is taken from the Supplier's SB X7-7 Verification Form Table SB X7-7, 7-F.							
NOTES:							

SB X7-7 Table 0: Units of Measure Used in UWMP*

(select one from the drop down list)

Acre Feet

**The unit of measure must be consistent with Submittal Table 2-3*

NOTES:

SB X7-7 Table-1: Baseline Period Ranges

Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	16,691	Acre Feet
	2008 total volume of delivered recycled water	-	Acre Feet
	2008 recycled water as a percent of total deliveries	0%	See Note 1
	Number of years in baseline period ^{1,2}	10	Years
	Year beginning baseline period range	1995	
	Year ending baseline period range ³	2004	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2003	
	Year ending baseline period range ⁴	2007	

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

² The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.

³ The ending year for the 10-15 year baseline period must be between December 31, 2004 and December 31, 2010.

⁴ The ending year for the 5 year baseline period must be between December 31, 2007 and December 31, 2010.

NOTES:

SB X7-7 Table 2: Method for Population Estimates	
Method Used to Determine Population (may check more than one)	
<input checked="" type="checkbox"/>	1. Department of Finance (DOF) or American Community Survey (ACS)
<input type="checkbox"/>	2. Persons-per-Connection Method
<input type="checkbox"/>	3. DWR Population Tool
<input type="checkbox"/>	4. Other DWR recommends pre-review
NOTES:	

SB X7-7 Table 3: Service Area Population		
Year	Population	
10 to 15 Year Baseline Population		
Year 1	1995	43,788
Year 2	1996	45,028
Year 3	1997	46,108
Year 4	1998	46,975
Year 5	1999	48,075
Year 6	2000	49,155
Year 7	2001	50,667
Year 8	2002	51,039
Year 9	2003	51,150
Year 10	2004	51,934
<i>Year 11</i>		
<i>Year 12</i>		
<i>Year 13</i>		
<i>Year 14</i>		
<i>Year 15</i>		
5 Year Baseline Population		
Year 1	2003	51,150
Year 2	2004	51,934
Year 3	2005	52,474
Year 4	2006	51,919
Year 5	2007	52,917
NOTES: Populations are from the Department of Finance.		

SB X7-7 Table 4: Annual Gross Water Use *

Baseline Year <i>Fm SB X7-7 Table 3</i>	Volume Into Distribution System <i>This column will remain blank until SB X7-7 Table 4-A is completed.</i>	Deductions					Acre Feet
		Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water <i>This column will remain blank until SB X7-7 Table 4-B is completed.</i>	Water Delivered for Agricultural Use	Process Water <i>This column will remain blank until SB X7-7 Table 4-D is completed.</i>	Annual Gross Water Use
10 to 15 Year Baseline - Gross Water Use							
Year 1	1995	13,091			-	-	13,091
Year 2	1996	13,765			-	-	13,765
Year 3	1997	15,346			-	-	15,346
Year 4	1998	13,882			-	-	13,882
Year 5	1999	17,166			-	-	17,166
Year 6	2000	16,713			-	-	16,713
Year 7	2001	17,098			-	-	17,098
Year 8	2002	16,885			-	-	16,885
Year 9	2003	15,908			-	-	15,908
Year 10	2004	17,411			-	-	17,411
Year 11	0	-			-	-	-
Year 12	0	-			-	-	-
Year 13	0	-			-	-	-
Year 14	0	-			-	-	-
Year 15	0	-			-	-	-
10 - 15 year baseline average gross water use							15,726
5 Year Baseline - Gross Water Use							
Year 1	2003	15,908			-	-	15,908
Year 2	2004	17,411			-	-	17,411
Year 3	2005	15,149			-	-	15,149
NOTES: Populations are from the Department of Finance.	2006	15,880			-	-	15,880
Year 5	2007	16,551			-	-	16,551
5 year baseline average gross water use							16,180
* Units of measure (AF, MG, or CCF) must remain consistent throughout the UWMP, as reported in Table 2-3.							
NOTES:							

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Complete one table for each source.

Name of Source		Groundwater		
This water source is:				
<input checked="" type="checkbox"/>	The supplier's own water source			
<input type="checkbox"/>	A purchased or imported source			
Baseline Year <i>Fm SB X7-7 Table 3</i>		Volume Entering Distribution System¹	Meter Error Adjustment² Optional (+/-)	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1995	13,091		13,091
Year 2	1996	13,765		13,765
Year 3	1997	15,346		15,346
Year 4	1998	13,882		13,882
Year 5	1999	17,166		17,166
Year 6	2000	16,713		16,713
Year 7	2001	17,098		17,098
Year 8	2002	16,885		16,885
Year 9	2003	15,908		15,908
Year 10	2004	17,411		17,411
Year 11	0			-
Year 12	0			-
Year 13	0			-
Year 14	0			-
Year 15	0			-
5 Year Baseline - Water into Distribution System				
Year 1	2003	15,908		15,908
NOTES: Populations are from the Department of Finance.	2004	17,411		17,411
Year 3	2005	15,149		15,149
Year 4	2006	15,880		15,880
Year 5	2007	16,551		16,551
¹ Units of measure (AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in Table 2-3.				
² Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document				
NOTES:				

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Complete one table for each source.

Name of Source		Surface Water		
This water source is:				
<input type="checkbox"/>		The supplier's own water source		
<input checked="" type="checkbox"/>		A purchased or imported source		
Baseline Year <i>Fm SB X7-7 Table 3</i>	Volume Entering Distribution System¹	Meter Error Adjustment² <i>Optional (+/-)</i>	Corrected Volume Entering Distribution System	
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1995			0
Year 2	1996			0
Year 3	1997			0
Year 4	1998			0
Year 5	1999			0
Year 6	2000			0
Year 7	2001			0
Year 8	2002			0
Year 9	2003			0
Year 10	2004			0
Year 11	0			0
Year 12	0			0
Year 13	0			0
Year 14	0			0
Year 15	0			0
5 Year Baseline - Water into Distribution System				
Year 1	2003			0
Year 2	2004			0
Year 3	2005			0
Year 4	2006			0
Year 5	2007			0
¹ Units of measure (AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in Table 2-3.				
² Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document				
NOTES: Surface water was not purchased or imported until mid-2016.				

SB X7-7 Table 5: Baseline Gallons Per Capita Per Day (GPCD)				
Baseline Year <i>Fm SB X7-7 Table 3</i>		Service Area Population <i>Fm SB X7-7 Table 3</i>	Annual Gross Water Use <i>Fm SB X7-7 Table 4</i>	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1995	43,788	13,091	267
Year 2	1996	45,028	13,765	273
Year 3	1997	46,108	15,346	297
Year 4	1998	46,975	13,882	264
Year 5	1999	48,075	17,166	319
Year 6	2000	49,155	16,713	304
Year 7	2001	50,667	17,098	301
Year 8	2002	51,039	16,885	295
Year 9	2003	51,150	15,908	278
Year 10	2004	51,934	17,411	299
Year 11	0	-	-	
Year 12	0	-	-	
Year 13	0	-	-	
Year 14	0	-	-	
Year 15	0	-	-	
10-15 Year Average Baseline GPCD				290
5 Year Baseline GPCD				
Baseline Year <i>Fm SB X7-7 Table 3</i>		Service Area Population <i>Fm SB X7-7 Table 3</i>	Gross Water Use <i>Fm SB X7-7 Table 4</i>	Daily Per Capita Water Use
Year 1	2003	51,150	15,908	278
Year 2	2004	51,934	17,411	299
Year 3	2005	52,474	15,149	258
NOTES: P	2006	51,919	15,880	273
Year 5	2007	52,917	16,551	279
5 Year Average Baseline GPCD				277
NOTES:				

SB X7-7 Table 6: Baseline GPCD*Summary From Table SB X7-7 Table 5*

10-15 Year Baseline GPCD	290
5 Year Baseline GPCD	277
NOTES:	

SB X7-7 Table 7: 2020 Target Method*Select Only One*

Target Method		Supporting Tables
<input checked="" type="checkbox"/>	Method 1	SB X7-7 Table 7A
<input type="checkbox"/>	Method 2	SB X7-7 Tables 7B, 7C, and 7D
<input type="checkbox"/>	Method 3	SB X7-7 Table 7-E
<input type="checkbox"/>	Method 4	Method 4 Calculator <i>Located in the WUE Data Portal at wuedata.water.ca.gov Resources button</i>
NOTES:		

SB X7-7 Table 7-A: Target Method 1**20% Reduction**

10-15 Year Baseline GPCD	2020 Target GPCD
290	232
NOTES:	

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

5 Year Baseline GPCD From SB X7-7 Table 5	Maximum 2020 Target ¹	Calculated 2020 Target ²			Confirmed 2020 Target ⁴
		As calculated by supplier in this SB X7-7 Verification Form	Special Situations ³		
			Prorated 2020 Target	Population Weighted Average 2020 Target	
277	264	232			232

¹ **Maximum 2020 Target** is 95% of the 5 Year Baseline GPCD except for suppliers at or below 100 GPCD.

² **Calculated 2020 Target** is the target calculated by the Supplier based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target. Supplier may only enter one calculated target.

³ **Prorated targets and population weighted target** are allowed for special situations only. These situations are described in Appendix P, Section P.3

⁴ **Confirmed Target** is the lesser of the Calculated 2020 Target (C5, D5, or E5) or the Maximum 2020 Target (Cell B5)

NOTES:

DWR Bulletin 118: Sacramento Groundwater
Basin Yolo Subbasin

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Sacramento Valley Groundwater Basin Yolo Subbasin

- Groundwater Basin Number: 5-21.67
- County: Yolo, Solano
- Surface Area: 256,000 acres (400 square miles)

Boundaries & Hydrology

The Yolo Subbasin, located in the southern portion of the Sacramento Valley Basin primarily within Yolo County. It is bounded on the east by the Sacramento River, on the west by the Coast Range, on the north by Cache Creek, and on the south by Putah Creek. The basin is roughly bisected by an anticlinal structure, but otherwise is gently sloping from west to east with elevations ranging from approximately 400 feet at the base of the Coast Range to the west to nearly sea level in the eastern areas. Major cities within the subbasin include Davis, West Sacramento, Winters, and Woodland.

Precipitation averages approximately 20 to 24 inches per year in the western portion of the subbasin, and approximately 18 to 20 inches per year in the eastern portion of the subbasin.

Hydrogeologic Information

Water Bearing Formations

The primary water bearing formations comprising the Yolo subbasin are sedimentary continental deposits of Late Tertiary (Pliocene) to Quaternary (Holocene) age. Fresh water-bearing units include younger alluvium, older alluvium, and the Tehama Formation (Olmstead, 1961 and DWR, 1978). The cumulative thickness of these units ranges from a few hundred feet near the Coast Range on the west to nearly 3000 feet near the eastern margin of the basin. Saline water-bearing sedimentary units underlie the Tehama formation and are generally considered the boundary of fresh water (Berkstresser, 1973).

Younger alluvium includes flood basin deposits and Recent stream channel deposits. Flood basin deposits occur along the eastern margin of the subbasin in the Yolo Flood Basin. They consist primarily of silts and clays, but along the eastern margin of the subbasin may be locally interbedded with stream channel deposits of the Sacramento River. Thickness of the unit ranges from 0 to 150 feet. The flood basin deposits have low permeability and generally yield low quantities of water to wells. The quality of ground water produced from the basin deposits is often poor.

Recent stream channel deposits consist of unconsolidated silt, fine- to medium-grained sand, gravel and occasionally cobbles deposited in and adjacent to active streams in the subbasin. They occur along the Sacramento River, Cache Creek, and Putah Creek. Thickness of the younger alluvium ranges from 0 to 150 feet.

The younger alluvium varies from moderately to highly permeable, but often lies above the saturated zone. Where saturated, the younger alluvium yields significant quantities of water to wells.

Older alluvium consists of loose to moderately compacted silt, silty clay, sand, and gravel deposited in alluvial fans during the Pliocene and Pleistocene. Thickness of the unit ranges from 60 to 130 feet, about one-quarter of which is coarse sand and gravel. Permeability of the older alluvium is highly variable. Wells penetrating sand and gravel lenses of the unit produce between 300 and 1000 gpm. Adjacent to the Sacramento River, wells completed in ancestral Sacramento River stream channel deposits yield up to 4000 gpm. Wells completed in the finer-grained portions of the older alluvium produce between 50 and 150 gpm.

The Tehama Formation is the thickest water-bearing unit underlying the Yolo subbasin, ranging in thickness from 1500 to 2500 feet. Surface exposures of the Tehama Formation are limited mainly to the Coast Range foothills along the western margin of the basin, as well as in the Plainfield Ridge. The Tehama consists of moderately compacted silt, clay, and silty fine sand enclosing lenses of sand and gravel, silt and gravel, and cemented conglomerate. Permeability of the Tehama Formation is variable, but generally less than the younger units. Because of its relatively greater thickness, however, wells completed in the unit can yield up to several thousand gallons per minute.

Underlying the Tehama Formation are brackish to saline water-bearing sedimentary units, including the somewhat brackish sedimentary rocks of volcanic origin (Pliocene to Oligocene?) underlain by marine sedimentary rocks (Oligocene? to Paleocene) which are typically of low permeability and contain connate water (Olmstead, 1961). The upper contact of these units generally coincides with the fresh/saline water boundary. The contact is found near the Coast Range at depths as shallow as a few hundred feet. Near the eastern margin of the basin it reaches depths of nearly 3000 feet.

Subsurface Flow Controls

The geologic structure of the groundwater subbasin is dominated by an anticlinal ridge oriented northwest to southeast, which is expressed at the surface as the Dunnigan Hills and Plainfield Ridge. The anticlinal structure impedes subsurface flow from west to east. Subsurface groundwater outflow sometimes occurs from the Yolo subbasin into the Solano subbasin to the south. Subsurface outflow and inflow may also occur beneath the Sacramento River to the east with the South and North American subbasins. Subsurface groundwater inflow may occur from the west out of the Capay Valley Basin.

Groundwater Level Trends

Groundwater levels are impacted by periods of drought due to increased groundwater pumping and less surface water recharge (e.g. in the late 1970's and early 1990's), but recover quickly in "wet" years. Long term trends do not indicate any significant decline in water levels, with the exception of localized pumping depressions in the vicinity of the Davis, Woodland and Dunnigan/Zamora areas. Past studies (Scott, 1975) have concluded that the

Yolo subbasin is subject to overdraft, however the completion of Indian Valley Reservoir in 1976 provided significant relief in the form of additional available surface water (YCFCWCD, 2000).

Groundwater Storage

Many studies have been conducted to determine the groundwater storage within parts or all of Yolo County. Several of these studies refer to calculations completed by Scott and Scalmanini in their 1975 report, Investigations of Groundwater Resources, Yolo County. Groundwater storage capacity for the entire county for groundwater aquifer depths between 20 and 420 feet was calculated as 14,038,000 acre-feet based on subtotals from six separate study areas. Specific yields were calculated, based on well log information, for three separate depth intervals within six study areas, and ranged from 6.5% to 9.7%.

Groundwater Storage Capacity. From the Scott and Scalmanini calculations it can be roughly estimated that the Yolo Subbasin, (defined in this report as a portion of the county) has a total storage capacity of 6,455,940 acre-feet for depths between 20 and 420 feet (see below).

Table: Storage capacity was calculated based on Scott (1975) as follows:

Groundwater Basin (Scott, 1975)	Area (acres)	Calculated Gross Storage Capacity (Scott, 1975)	Estimated % area within Yolo Subbasin ¹	Estimated Storage Capacity within Yolo Subbasin ¹
Cache Creek	45,800	1,678,100	20%	335,620
Upper Cache- Putah	70,300	2,017,700	100%	2,017,700
Plainfield Ridge	8,800	240,800	100%	240,800
Lower Cache- Putah	97,300	2,876,900	95%	2,733,055
Colusa	95,700	2,709,800	0%	0
Yolo Bypass	129,100	4,514,700	25%	1,128,765
Totals	447,000	14,038,000		6,455,940

¹Represents the portion of each Groundwater Basin (as defined by Scott, 1975) that is contained within the Yolo Subbasin (as defined by the DWR). Percentages were estimated by DWR staff.

Groundwater in Storage. Groundwater storage between the depths of 20 to 420 feet in 1974 for all of Yolo County was calculated to be 13,208,400 acre-feet (Scott, 1975). Based on the Scott report, groundwater storage within the Yolo Subbasin for 1974 is estimated at 6,074,220 acre-feet (see below).

Table: 1974 groundwater storage calculations based on Scott (1975):

Groundwater Basin (Scott, 1975)	Area (acres)	1974 Calculated Storage (Scott, 1975)	Estimated % area within Yolo Subbasin ¹	Estimated 1974 Storage within Yolo Subbasin ¹
Cache Creek	45,800	1,528,700	20%	305,740
Upper Cache- Putah	70,300	1,921,000	100%	1,921,000
Plainfield Ridge	8,800	189,400	100%	189,400
Lower Cache- Putah	97,300	2,677,400	95%	2,543,530
Colusa	95,700	2,433,700	0%	0
Yolo Bypass	129,100	4,458,200	25%	1,114,550
Totals	447,000	13,208,400		6,074,220

¹Represents the portion of each Groundwater Basin (as defined by Scott, 1975) that is contained within the Yolo Subbasin (as defined by the DWR). Percentages were estimated by DWR staff.

Groundwater Budget (Type C)

Currently no groundwater budget has been calculated for the Yolo Subbasin (see comments below).

Groundwater Quality

Groundwater found within the subbasin is characterized as a sodium magnesium, calcium magnesium, or magnesium bicarbonate type. The quality is considered good for both agricultural and municipal uses, even though it is hard to very hard overall (generally over 180 mg/l CaCO₃). Selenium and boron are found in higher concentrations locally (Evenson, 1985). Total dissolved solids range from a of 107 ppm to 1300 ppm and average 574 ppm, based on Title 22 data obtained from public supply water well samples (DHS, 2000).

Localized impairments include elevated concentrations of boron (as high as 2 to 4 ppm) in groundwater along Cache Creek and in the Cache Creek Settling Basin area, increased levels of selenium present in the groundwater supplies for the City of Davis, and localized areas of nitrate contamination (YCFCWCD 1992) (Evenson, 1985).

Water Quality in Public Supply Wells

Constituent Group ¹	Number of wells sampled ²	Number of wells with a concentration above an MCL ³
Inorganics – Primary	61	3
Radiological	53	0
Nitrates	67	1
Pesticides	59	0
VOCs and SVOCs	59	1
Inorganics – Secondary	61	11

¹ A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).

² Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.

³ Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

Well Characteristics

Well yields (gal/min)		
Municipal/Irrigation	Range: 150 – 4000+	Average: 1500 (estimate)
Total depths (ft) ¹		
Domestic	Range: 40 - 600	Average: 230 (estimate)
Municipal/Irrigation	Range: 50 - 1500	Average: 400 (estimate)

¹Based on DWR data.

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
DWR	Groundwater Levels	10 semi-annually
		4 monthly
YCFC&WCD		92 semi-annually
		1 monthly
Sacramento County		1 semi-annually
USBR		12 semi-annually
		7 monthly
DHS	Water Quality	133 annually
DWR	Ground Subsidence	1 continuously

Basin Management

Groundwater management: R.D. 108 adopted AB3030 plan 2/95
 R.D. 2035 adopted AB3030 plan 4/95
 R.D. 2068 adopted AB3030 plan 1/97
 Yolo County Flood Control and Water Conservation District are drafting plan but not pursuant to AB3030
 R.D. 900, City of West Sacramento is not drafting AB3030 plan

Water agencies

Public	Yolo County Flood Control and Water Conservation District City of Woodland, City of Davis, City of West Sacramento
Private	R.D. 108, 900,2035, 2068

Comments:

Although groundwater budgets have been previously calculated for areas overlying the Yolo Subbasin, no groundwater budget has been calculated for the Yolo Subbasin as defined by this report.

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Errata

Changes made to the basin description will be noted here.

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Recycled Water Opportunities Evaluation

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FINAL

Recycled Water
Opportunities Evaluation
City of Woodland, California

Prepared for
City of Woodland, California
April 2014

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FINAL
Recycled Water
Opportunities Evaluation
City of Woodland, California

Prepared for City of Woodland, California
April, 2014



April 17, 2014

Brown and Caldwell
Project No. 144119



1590 Drew Avenue, Suite 210
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Section 1

Introduction

The City of Woodland (City) currently owns and operates the Woodland Water Pollution Control Facility (WPCF). The WPCF provides tertiary treatment, including an oxidation ditch secondary process, cloth media tertiary filtration and ultraviolet (UV) disinfection. The WPCF operates under a NPDES permit (Order No. R5-2009-0010, adopted February 5, 2009). The permit specifies that the WPCF has an average daily flow capacity of 10.4 million gallons per day (mgd). Current average dry weather flows are in the range of 5 to 6 mgd. A design is being prepared to upgrade the secondary treatment facilities at the WPCF to a Modified Ludzack Ettinger (MLE) process, which should provide improved process control and greater potential future capacity. Wastewater from the WPCF is currently conveyed through a pipeline and ditches for year 'round discharge to Tule Canal approximately 4 miles east of the treatment plant. Even though recycled water use is encouraged by the State, the City has not pursued possible wastewater reuse projects in the past because of potential associated costs and moderately elevated WPCF effluent salinity compared with other local sources of irrigation water.

The City is a participant in the Woodland-Davis Clean Water Agency, which is planning to construct an intake on the Sacramento River, raw water pipelines connecting the intake to a new regional water treatment plant near the WPCF, and separate pipelines delivering treated water to Woodland, Davis and UC Davis. This project and other water system related improvements will substantially reduce the salinity of the WPCF effluent, making the effluent more attractive as a source of recycled water for irrigation and other uses. The planned Woodland southwest main water transmission pipeline will convey potable water from the new water treatment plant to the southwest portion of Woodland and then along the southern edge of the city. Installing a parallel recycled water pipeline at the same time as the new surface water pipeline could be an economical means to provide recycled water to users near the pipeline route. There are also potential agricultural users of recycled water to the east and northeast of the WPCF.

The purpose of this study was to evaluate potential recycled water uses, regulatory issues, approximate costs, and benefits for areas near the WPCF and along the southwest water transmission pipeline route.

Section 2

Regulatory Framework for Recycled Water Usage

This section provides an overview of general regulations, permitting, and constraints for water reuse.

2.1 Recycled Water Categories

The California regulations for water reuse or water recycling criteria are prescribed in California Title 22 Code of Regulations (Title 22). The water recycling criteria are established by California Department of Public Health (CDPH) but the state agency regulating water recycling projects is the California Regional Water Quality Control Board (Regional Water Board). Title 22 provides definitions of recycled water quality according to treatment level and disinfection performance requirements. The categories of defined recycled water include:

- Disinfected secondary - 2.2 recycled water,
- Disinfected secondary - 23 recycled water,
- Disinfected tertiary recycled water.

2.2 Non-potable Reuse of Recycled Water

Non-potable Reuse or NPR is a broad term that encompasses several beneficial uses of treated wastewater. The reused water may be generated from processes that subject wastewater to varying levels of treatment; consequently, the rules and regulations governing non-potable water reuse are also varied. At a minimum, secondary treatment of wastewater is required prior to any non-potable reuse. In order to provide adequate protection to the public, the level of treatment must be increased progressively for applications involving increasing levels of human exposure to the reused water, as illustrated on Figure 2-1.

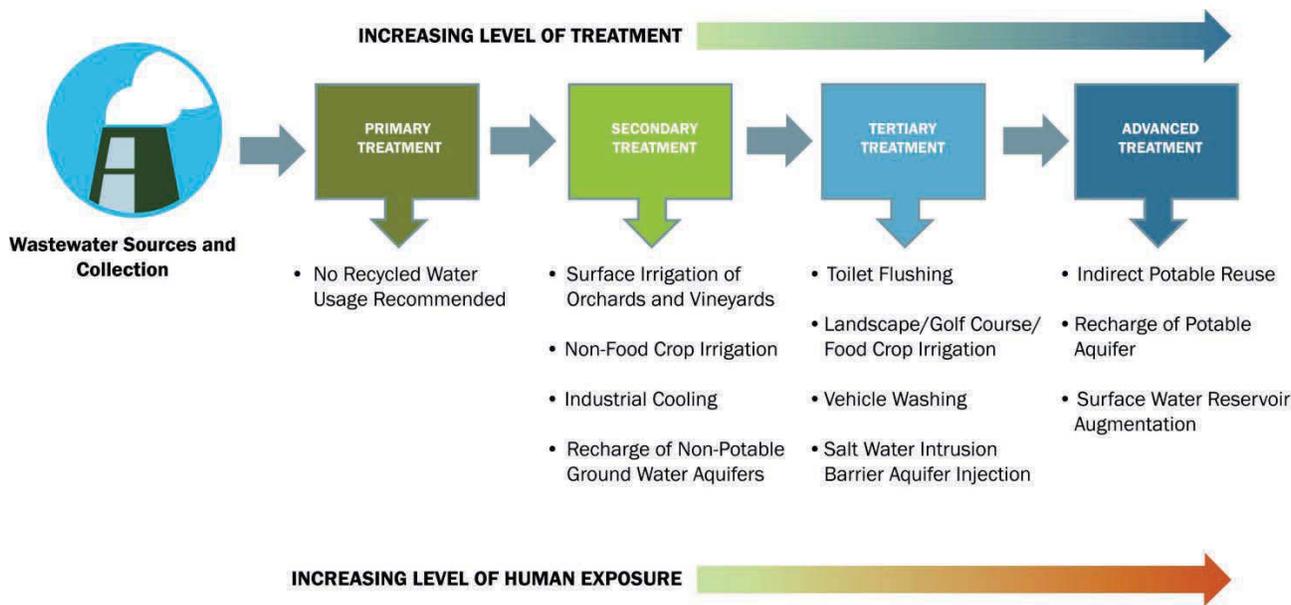


Figure 2-1. Common Uses of Recycled Water at Various Treatment Levels

2.2.1 State Water Resources Control Board Recycled Water Policy

In 2009, the State Water Resources Control Board (SWRCB) adopted a recycled water policy aimed at increasing recycled water usage, minimizing carbon footprint, and promoting sustainable management of surface and groundwater resources. The policy lists the following primary goals:

- Increasing recycled water usage over 2002 levels by one million AFY by 2020 and by at least two million AFY by 2030
- Increasing stormwater usage by at least half a million AFY by 2020 and at least one million AFY by 2030
- Increasing water conservation in industrial and urban uses by 20 percent by 2020
- Substituting as much recycled water for potable water as possible by 2030

Although increased conservation and use of stormwater is planned, the thrust of the policy is to increase the use of recycled water from municipal sources in a manner that complies with California Title 22, and all other applicable state and federal water quality laws and regulations. The policy describes criteria intended to streamline and generate consistency in the permitting of recycled water projects. Topics addressed by the policy include the following:

- Salt and nutrient management plans for groundwater basins and watersheds
- Streamlined permitting for landscape irrigation projects that use recycled water
- Groundwater recharge projects using recycled water
- Antidegradation
- Contaminants of emerging concern
- Incentives for the use of recycled water

2.2.2 Title 22 Quality Standards for Non-potable Reuse

Chapter 3 of the California Code of Regulations (CCR) Title 22, Division 4, outlines criteria for water recycling. This document is commonly abbreviated as Title 22 in the industry, and contains regulations that govern the sources, production, intended use, and quality of recycled water. Title 22 is currently oriented toward non-potable reuse. A brief summary of the key information contained in Title 22 is provided in Table A-1 in Appendix A.

2.3 Recycled Water Reuse Water Quality

The various forms of recycled water and the quality criteria associated with that type of recycled water are summarized in Table 2-1.

Table 2-1. Title 22 Water Quality Standards for Various Types of Non-potable Reuse		
Recycled Water Type	Parameter	Quality Criteria
Disinfected Tertiary (secondary, coagulated, filtered and disinfected)	BOD ₅	<10 mg/L
	TSS	<10 mg/L
	Total Coliform, MPN/100 mL	<2.2 (median/7 days) >23 (once/ 30 days) <240 (at all times)
Disinfected Secondary – 2.2 (secondary and disinfected)	Turbidity, NTU	<2 (24 hr average) >5 (<5% of time) <10 (at all times)
	BOD ₅	<45 mg/L (7 day) <30 mg/L (30 day)
	TSS	<45 mg/L (7 day) <30 mg/L (30 day)
Disinfected Secondary – 23 (secondary and disinfected)	Total Coliform, MPN/100 mL	<2.2 (median/7 days) >23 (once/ 30 days)
	BOD ₅	<45 mg/L (7 day) <30 mg/L (30 day)
	TSS	<45 mg/L (7 day) <30 mg/L (30 day)
Undisinfected Secondary (oxidized but not disinfected)	Total Coliform, MPN/100 mL	<23 (median/7 days) <240 (once/ 30 days)
	BOD ₅	<45 mg/L (7 day) <30 mg/L (30 day)
Undisinfected Secondary (oxidized but not disinfected)	TSS	<45 mg/L (7 day) <30 mg/L (30 day)

2.4 Allowable Non-potable Recycle Water Uses

As defined in Title 22, the City of Woodland recycled water may be limited to specific applications based on its “level of treatment.” Table 2-2 provides a summary of the various applications allowed based on the minimum level of treatment provided.



Table 2-2. Allowable Non-potable Uses of Recycled Water based on Title 22 Treatment Level

Type of Recycled Water Use	Acceptable Minimum Recycled Water Treatment Level		
	Disinfected Tertiary	Disinfected Secondary	Undisinfected Secondary
Urban Uses and Landscape Irrigation			
Fire Protection	✓		
Trucked Recycled Water for Construction / Multiple Uses	✓		
Toilet and Urinal Flushing	✓		
Commercial Car Washes (Vehicle Wash Racks)	✓		
Commercial Laundries	✓		
Irrigation of Parks, Schoolyards, Residential Landscaping	✓		
Irrigation of Cemeteries, Highway Landscaping	✓	✓	
Irrigation of Nurseries	✓	✓	
Landscape Impoundment	✓	✓*	
Agricultural Irrigation			
Pasture for Milk Producing Animals	✓	✓	
Fodder and Fiber Crops	✓	✓	✓
Orchards (no contact between fruit and recycled water)	✓	✓	✓
Vineyards (no contact between fruit and recycled water)	✓	✓	✓
Non-Food Bearing Trees	✓	✓	✓
Food Crops Eaten After Processing	✓	✓	
Food Crops Eaten Raw	✓		
Structural Fire Fighting	✓		
Environmental and Other Uses			
Recreational ponds with Body Contact (Swimming)	✓		
Wildlife Habitat/Wetland	✓	✓	
Artificial Snow Making	✓		
Soil Compaction, Concrete Mixing	✓	✓	
Trucked Recycled Water for Construction Dust Control	✓		
Aquaculture	✓	✓*	
Groundwater Recharge			
Seawater Intrusion Barrier	✓*		
Replenishment of Potable Aquifers	✓*		

* Restrictions and/or additional treatment may apply.

SOURCE: Water Recycling 2030, California's Recycled Water Task Force, June 2003.



Section 3

Potential Recycled Water Flow and Quality

The Woodland WPCF produces a disinfected tertiary effluent that is suitable from a regulatory perspective for unrestricted reuse. In this section, the current flows and water quality are presented and discussed. Suitability of recycled water from the WPCF for irrigation in terms of potential soil and crop effects is also discussed.

3.1 Recycled Water Flow

The effluent flow rate is approximately 5 million gallons per day (mgd), which would correspond to 5,600 AF per year. The April through October irrigation season total would be 3,280 AF. If all the water were available for irrigation reuse, the flow would be sufficient for irrigation of approximately 500 to 700 acres of crops or landscape plants in a typical July. Considerably more area would be required to utilize all the effluent in cooler months. Water balance considerations are discussed for potential areas of use later in Section 5.

3.2 Recycled Water Quality

There are two sets of considerations of water quality for water reuse. The first is confirmation that the tertiary disinfected standards are being met. This is confirmed by the effluent meeting discharge standards for total coliform of less than 2.2 MPN/100 mL and a turbidity of less than 2 NTU as specified in Title 22.

The second set of considerations for water quality is the quality of the water for irrigation purposes. Irrigation water quality guidelines present values of recycled water salinity and specific ion concentrations for irrigation of various crops with a range of sensitivity to salinity and specific ions, such as boron. The criteria are presented in Table 3-1.

The growth of plants and their ability to absorb moisture from the soil are influenced by salinity. Soil salinity is managed by adding an excess of water above that required for crop growth to leach the salts from the soil profile. A “rule of thumb” for total water required to prevent salt buildup in arid climates is to apply the crop needs plus about 15 percent. The structure of clay soils can be also damaged when there is an excess of sodium with respect to calcium and magnesium in the wastewater as measured by the sodium adsorption ratio (SAR).

The WPCF effluent quality is compared to the irrigation guidelines in Table 3-3. The current effluent is moderately elevated in salinity and boron. The effluent quality after implementation of the surface water supply project is projected to be much improved and potentially have only a slight effect on the most sensitive crops due to salinity.

Table 3-1. Guidelines for Interpretation of Water Quality for Irrigation ^(a)				
Potential Irrigation Problems	Units	Degree of Restriction on Use		
		None	Slight to Moderate	Severe
Salinity (affects crop water availability)				
EC _w ^b	dS/m or mmho/cm	<0.7	0.7 - 3.0	>3.0
TDS	mg/L	<450	450 - 2000	>2000
Permeability (affects infiltration rate of water into the soil. Evaluate using EC_w and SAR together) ^{c, d}				
SAR = 0 - 3		and EC _w = >0.7	0.7 - 0.2	<0.2
SAR = 3 - 6		and EC _w = >1.2	1.2 - 0.3	<0.3
SAR = 6 - 12		and EC _w = >1.9	1.9 - 0.5	<0.5
SAR = 12 - 20		and EC _w = >2.9	2.9 - 1.3	<1.3
SAR = 20 - 40		and EC _w = >5.0	5.0 - 2.9	<2.9
Specific ion toxicity (affects sensitive crops)				
Sodium (Na) ^{e, f}				
surface irrigation	SAR	<3	3 - 9	>9
sprinkler irrigation	mg/L	<70	>70	
Chloride (Cl) ^{e, f}				
surface irrigation	mg/L	<140	140 - 350	>350
sprinkler irrigation	mg/L	<100	>100	
Boron (B)	mg/L	<0.7	0.7 - 3.0	>3.0
Miscellaneous effects (affects susceptible crops)				
Nitrogen (Total-N) ^g	mg/L	<5	5 - 30	>30
Bicarbonate (HCO ₃) (overhead sprinkling only)	mg/L	<90	90 - 500	>500
pH		Normal range 6.5 - 8.4		
Residual chlorine (overhead sprinkling only)	mg/L	<1.0	1.0 - 5.0	>5.0

- a) Adapted from University of California Committee of Consultants and Ayers and Westcot. The basic assumptions of the guidelines are discussed on Table 3-2.
- b) EC_w means electrical conductivity of the irrigation water, reported in mmho/cm or dS/m. TDS means total dissolved solids, reported in mg/L.
- c) SAR means sodium adsorption ratio. SAR is sometimes reported as R_{Na}. At a given SAR, infiltration rate increases as salinity (EC_w) increases. Evaluate the potential permeability problem by SAR and EC_w in combination.
- d) For wastewaters, it is recommended that the SAR be adjusted to include a more correct estimate of calcium in the soil water following an irrigation.
- e) Most tree crops and woody ornamentals are sensitive to sodium and chloride; use the values shown. Most annual crops are not sensitive.
- f) With overhead sprinkler irrigation and low humidity (<30%), sodium or chloride greater than 70 or 100 mg/L, respectively, have resulted in excessive leaf absorption and crop damage to sensitive crops.
- g) Total nitrogen should include nitrate-nitrogen, ammonia-nitrogen, and organic-nitrogen. Although forms of nitrogen in wastewater vary, the plant responds to the total nitrogen.



Table 3-2. Guideline Assumptions

Assumptions in the Guidelines

The water quality guidelines in Table 3-1 are intended to cover the wide range of conditions encountered in California's irrigated agriculture. Several basic assumptions have been used to define the range of usability for these guidelines. If the water is used under greatly different conditions, the guidelines may need to be adjusted. Wide deviations from the assumptions might result in wrong judgments on the usability of a particular water supply, especially if it is a borderline case. Where sufficient experience, field trials, research, or observations are available, the guidelines may be modified to more closely fit local conditions.

The basic assumptions in the guidelines are given below.

Yield Potential

Full production capability of all crops, without the use of special practices, is assumed when the guidelines indicate no restrictions on use. A "restriction on use" indicates that there may be a limitation such as choice of crop or the need for special management in order to maintain full production capability, but a "restriction on use" does not indicate that the water is unsuitable for use.

Site Conditions

Soil texture ranges from sandy-loam to clay with good internal drainage. Rainfall is low and does not play a significant role in meeting crop water demand or leaching. In the Sierra and extreme North Coast areas of California where precipitation is high for part or all of the year, the guideline restrictions are too severe. Drainage is assumed to be good, with no uncontrolled shallow water table present.

Methods and Timing of Irrigations

Normal surface and sprinkler irrigation methods are used. Water is applied infrequently as needed, and the crop utilizes a considerable portion of the available stored soil water (50% or more) before the next irrigation. At least 15% of the applied water percolates below the root zone (leaching fraction [LF] > 15%). The guidelines are too restrictive for specialized irrigation methods, such as drip irrigation, which result in near daily or frequent irrigations. The guidelines are not applicable for subsurface irrigation.

Water Uptake by Crops

Different crops have different water uptake patterns, but all take water from wherever it is most readily available within the root zone. Each irrigation leaches the upper root zone and maintains it at a relatively low salinity. Salinity increases with depth and is greatest in the lower part of the root zone. The average salinity of the soil solution is about three times that of the applied water.

Salts leached from the upper root zone accumulate to some extent in the lower part but eventually are moved below the root zone by sufficient leaching. The crop responds to average salinity of the root zone. The higher salinity in the lower root zone becomes less important if adequate moisture is maintained in the upper, "more active" part of the root zone.

Table 3-3 . Woodland Tertiary Effluent Quality

Constituent	Unit	Current		Estimated Future	
		Value	Degree of Restriction	Value	Degree of Restriction
EC ^(a)	mmho/cm	1.6	None for forage crops, slight to moderate for tree crops	0.82	None to Slight
Sodium	mg/L	190	Slight to Moderate	110	Slight to Moderate
Calcium	mg/L	182	--	87	--
Magnesium	mg/L	78	--	34	--
SAR ^(b)	unitless	2.95	None	2.5	None
Boron	mg/L	2.35	Slight to Moderate, depending upon crops	0.68	None

(a) EC = Electrical Conductivity = measure of salinity

(b) SAR = Sodium Adsorption Ratio



Section 4

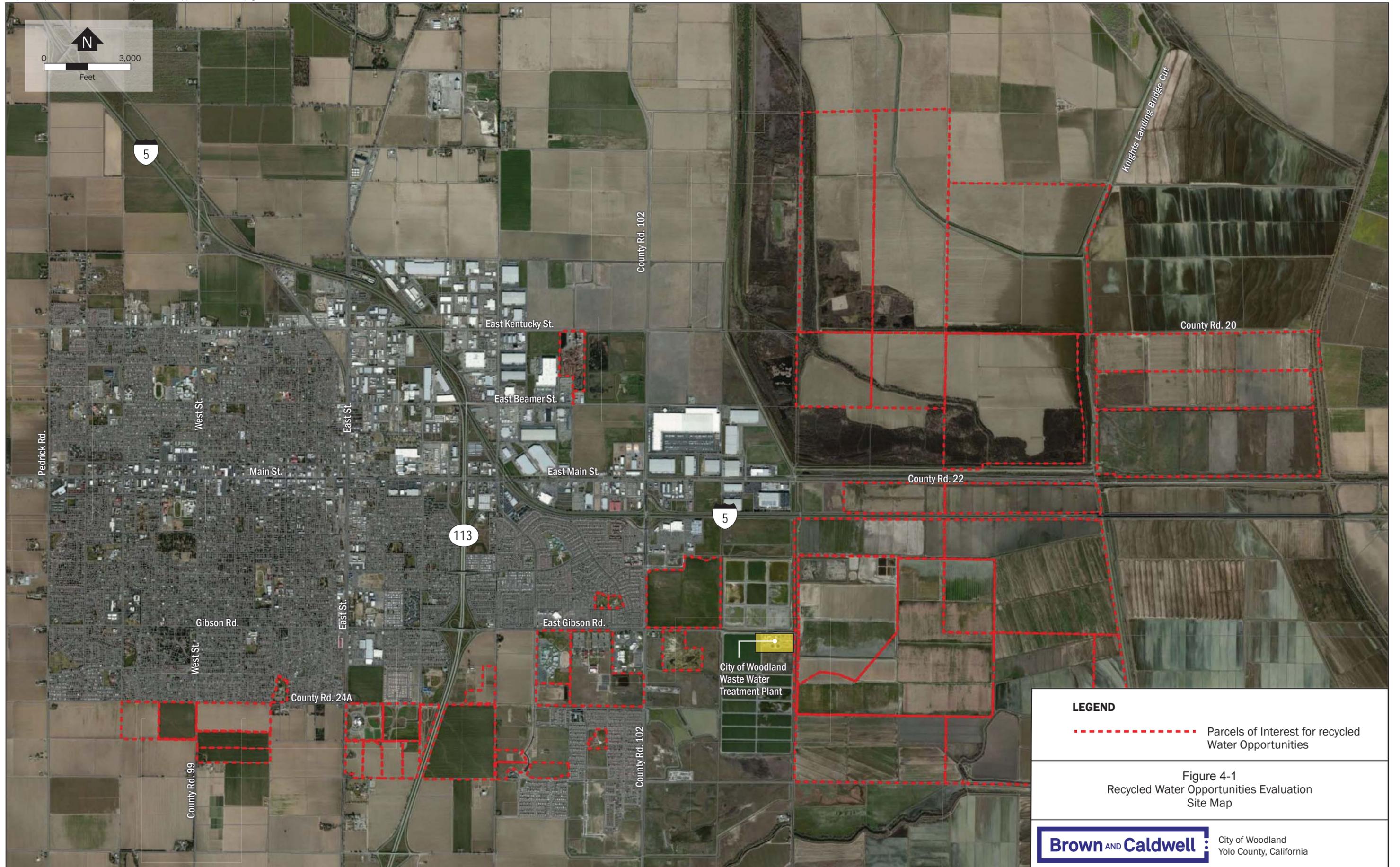
Potential Sites for Reuse

The general types of water reuse opportunities were presented in Section 2 and include a variety of urban landscape and agricultural reuse opportunities. Primary options for water reuse in the study area include urban landscape irrigation, agricultural irrigation, and power plant cooling uses. City urban landscape reuse opportunities include park lands and sporting venues. Geographically located within the California Central Valley, the City is also near a variety of agricultural fields, which are located near the WPCF and the outlying rural City landscape.

For the purposes of this report, the potential sites for reuse are divided between eastern and western properties centralized around the WPCF location. The potential properties are comprised of approximately 5,056 acres located east of the treatment plant and approximately 876 gross acres located west of the treatment plant, for a total of approximately 5,900 acres. The boundaries of potential reuse parcels are outlined in Figure 4-1.

4.1 Eastern Reuse Properties

Properties located to the east of the water treatment plant are comprised of twenty properties in sizes ranging from 7 to 626 acre parcels, totaling approximately 5,056 acres. All the eastern properties are potential agricultural reuse properties. The list of potential agricultural reuse properties located east of the treatment plant is presented in Table 4-1. An aerial map showing the locations of the potential reuse properties is provided in Figure 4-2.



LEGEND

----- Parcels of Interest for recycled Water Opportunities

Figure 4-1
Recycled Water Opportunities Evaluation
Site Map

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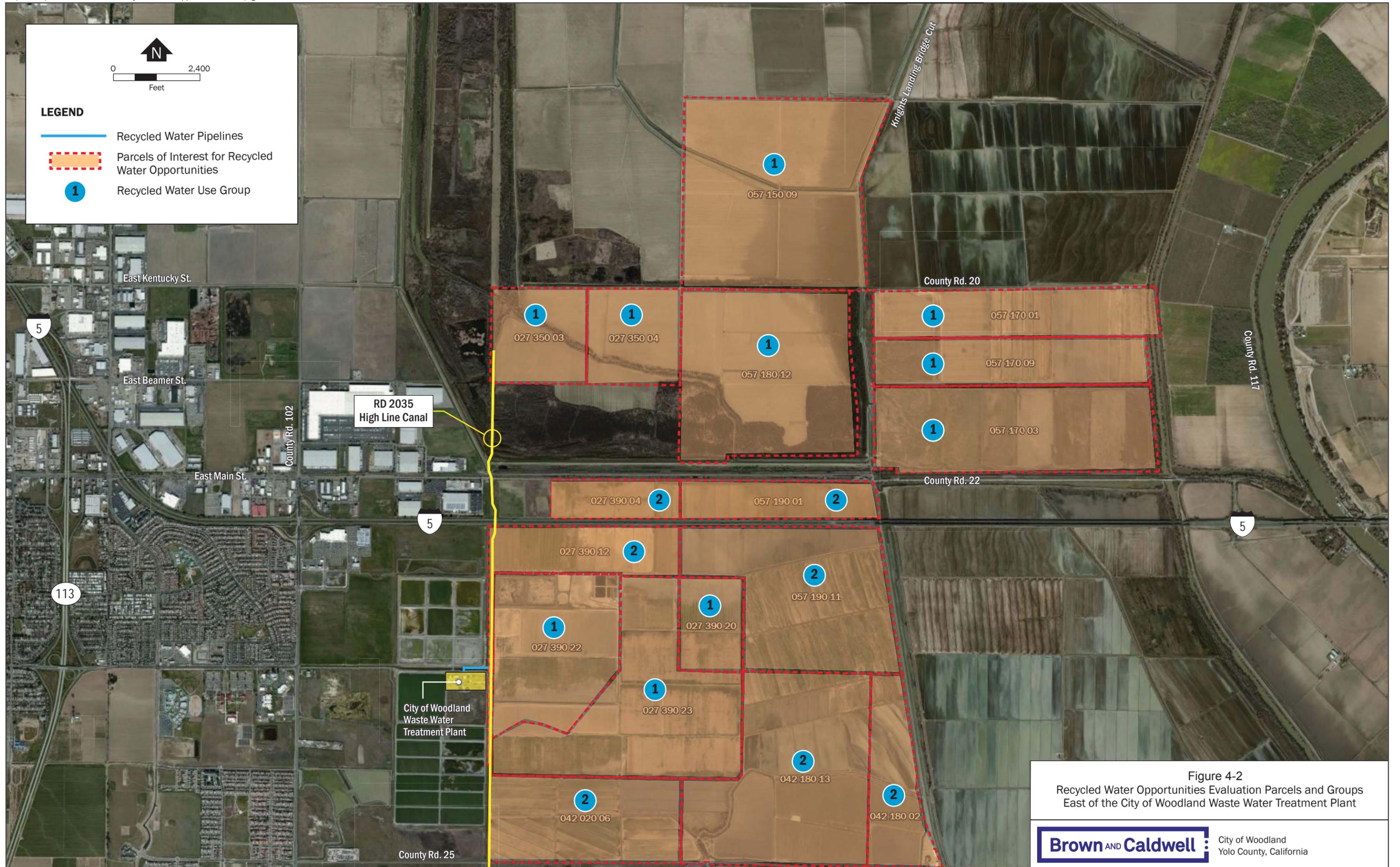


Figure 4-2
 Recycled Water Opportunities Evaluation Parcels and Groups
 East of the City of Woodland Waste Water Treatment Plant

Brown AND Caldwell City of Woodland
 Yolo County, California

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Table 4-1. Eastern Reuse Properties					
Item	APN	Owner Description	Approx. Area (ac)	Zoning	Zoning Comments
1	027 390 20	City of Woodland / Pacific Coast Producers	106	Agricultural	Within City Boundaries
2	027 390 22	City of Woodland / Pacific Coast Producers	320	Agricultural	Within City Boundaries
3	027 390 23	City of Woodland / Pacific Coast Producers	464	Agricultural	Within City Boundaries
4	027 390 04	Conaway Preserve	87	Agricultural	Within City Boundaries
5	027 390 12	Conaway Preserve	169	Agricultural	Within City Boundaries
6	042 020 06	Conaway Preserve	298	Agricultural	Outside City Boundary
7	042 180 02	Conaway Preserve	164	Agricultural	Outside City Boundary
8	042 180 13	Conaway Preserve	524	Agricultural	Outside City Boundary
9	057 190 01	Conaway Preserve	130	Agricultural	Outside City Boundary
10	057 190 11	Conaway Preserve	434	Agricultural	Outside City Boundary
11	057 180 12	Conaway Preserve	512	Agricultural	Outside City Boundary
12	027 350 03	Conaway Preserve	160	Agricultural	Outside City Boundary
13	027 350 04	Conaway Preserve	159	Agricultural	Outside City Boundary
14	057 150 09	Neal Dow Family LP	626	Agricultural	Outside City Boundary
15	057 170 03	City of Woodland	427	Agricultural	Outside City Boundary
16	057 170 01	Koerwitz	245	Agricultural	Outside City Boundary
17	057 170 09	Koerwitz	232	Agricultural	Outside City Boundary
Total Area (ac)			5,057		

The eastern agricultural properties are interconnected by a series of existing open water irrigation and drainage canals. The supply canal closest to the WPCF is locally known as the Reclamation District 2035 (RD 2035) Road 103 High Line Canal system. The canal system has the capacity to convey the 5 mgd reuse water generated at the WPCF throughout the western and northern portion of the agricultural area directly to many parcels and through drainage canals or channels to other parcels. The only major infrastructure required to utilize the RD 2035 High Line Canal system is a 600 foot long pipeline. A couple of the eastern parcels in the Yolo Bypass could also be served from the City’s existing effluent pipeline to the Yolo Bypass.

The largest potential user of recycled water to the east would be the Conaway Preserve, a major area farm and wildlife preserve. Based on communication with Conaway Preserve representatives in May and June 2013, the 2,644 acres on the Preserve identified as potentially able to receive recycled could accept a limited amount of reuse water during the summer irrigation season and could likely accept all the reuse water during a portion of the winter season. The Conaway Preserve primarily grows rice, much of which is used for export to international destinations. During the irrigation season, rice needs to be irrigated with non-recycled water due to marketability issues according to the California Rice Commission (2013). Outside the irrigation season, the recycled water could likely be used for flooding to promote the decomposition of rice stubble remaining in the fields following harvest.



Parcels Irrigable with Recycled Water during the Main Irrigation Season

The Conaway parcels that could utilize recycled water during the irrigation season are parcels in the Cache Creek Settling Basin that are not suitable for growing rice. These parcels were identified in Figures 4-1 and 4-2. Other parcels north of those owned by Conaway in the Cache Creek Settling Basin could also possibly be irrigated with recycled water. Three parcels in the Yolo Bypass could be irrigated with recycled water during the irrigation season. Those would include the City-owned parcel just north of the railroad tracks and the next adjacent parcels further north.

The City also leases 890 gross acres on a long term basis to PCP immediately east of the WPCF property. PCP processes tomatoes from July through early October and utilizes most of the land for irrigation of grass crops using wastewater from its cannery. PCP could utilize recycled water from the WPCF for irrigation of its site during late spring and early summer before the processing season.

A proposal has also come forth recently for residential and commercial development of some of the land east of the WPCF owned by the City and Conaway. New development could include anything from a purple pipe distribution system for recycled water for only parks to a complete dual distribution system for residential parcels. Addressing this conceptual project was beyond the scope of this study, but possible ramifications are mentioned herein.

4.2 Western Reuse Properties

Properties located to the west of the WPCF are comprised of thirty properties in sizes ranging from 4.7 to 134 acre parcels, totaling approximately 939 acres. The western properties include both agricultural and urban landscape reuse opportunities. The list of potential reuse properties located west of the treatment plant is presented in Table 4-2. An aerial map showing the locations of the recommended reuse properties is provided in Figure 4-3.

Table 4-2. Western Reuse Properties

Item	APN	Owner Description	Approx. Area (ac)	Zoning	Zoning Comments
1	027 390 33	Woodland Development Co	134.3	Agricultural	Within City Boundaries
2	027 360 23	Woodland Biomass	37.2	Industrial	Within City Boundaries
3	042 580 33	Barton Trust	35.9	Agricultural	Within City Boundaries
4	027 520 15	City of Woodland	5.4	City Park	Within City Boundaries
5	027 520 80	City of Woodland	4.7	City Park	Within City Boundaries
6	042 580 27	Woodland Community College	120.9	Public School	Within City Boundaries
7	042 580 15	City of Woodland	7.9	City Park	Within City Boundaries
8	042 580 43	Woodland Springlake Partners	9.5	Agricultural	Within City Boundaries
9	041 070 52	Optomistic Partners LLC	19.6	Agricultural	Within City Boundaries
10	041 080 14	Beeman Michael	129.4	Agricultural	Outside City Boundary
11	041 080 02	City of Woodland	40.0	City Services	Within City Boundaries
12	041 080 01	City of Woodland	37.9	City Services	Within City Boundaries
13	041 080 08	Singh Balwant	17.4	Agricultural	Outside City Boundary
14	041 080 09	Gunnerson Betty B	19.6	Agricultural	Outside City Boundary
15	041 080 05	Beeman Fam Trust	22.7	Agricultural	Outside City Boundary



Table 4-2. Western Reuse Properties					
Item	APN	Owner Description	Approx. Area (ac)	Zoning	Zoning Comments
16	041 080 12	Benson Rev Trust	17.6	Agricultural	Outside City Boundary
17	039 140 16	City of Woodland	8.3	City Park	Within City Boundaries
18	039 150 01	Beeman Timothy L	61.5	Agricultural	Outside City Boundary
19	039 150 02	Franke Harold R Estate	34.9	Agricultural	Outside City Boundary
20	039 150 03	Franke Harold R Estate	31.0	Agricultural	Outside City Boundary
21	039 030 03	Jeness Benning F	39.4	Agricultural	Outside City Boundary
22	039 030 02	Hilleby Martha I	40.4	Agricultural	Outside City Boundary
Total Area (ac)			876		

The western reuse properties are spread across the southern boundary of the City with no existing system for recycled water conveyance. The use of the western properties will require the construction of a pipeline of up to approximately 4.5 miles in length for water conveyance to reach all the properties.

In order to meet the potential demand of all the western properties, the pipeline would need to be sized to carry flow rates ranging between 20 gpm and 4,400 gpm and with pipe diameters ranging in size from 2-inches to 18-inches. Since this would exceed the current output of the WPCF, only a portion of the parcels could reliably be served with recycled water. Adjustments in pipeline distance and diameter would vary based on the properties selected for reuse. Figure 4-3 shows the anticipated pipeline alignment along the existing treated water pipeline alignment.

The draft General Plan land use map for the City is shown in Figure 4-4. The likely intermediate and long term uses of the parcels can be taken from the land use designations shown. The land use designations were utilized to divide the western reuse parcels into four groups based on likely priority of service for providing recycled water. Grouping of parcels and detailed evaluations of the required pipeline sizes, costs, and issues involved with serving the groups of parcels are discussed in Section 5.



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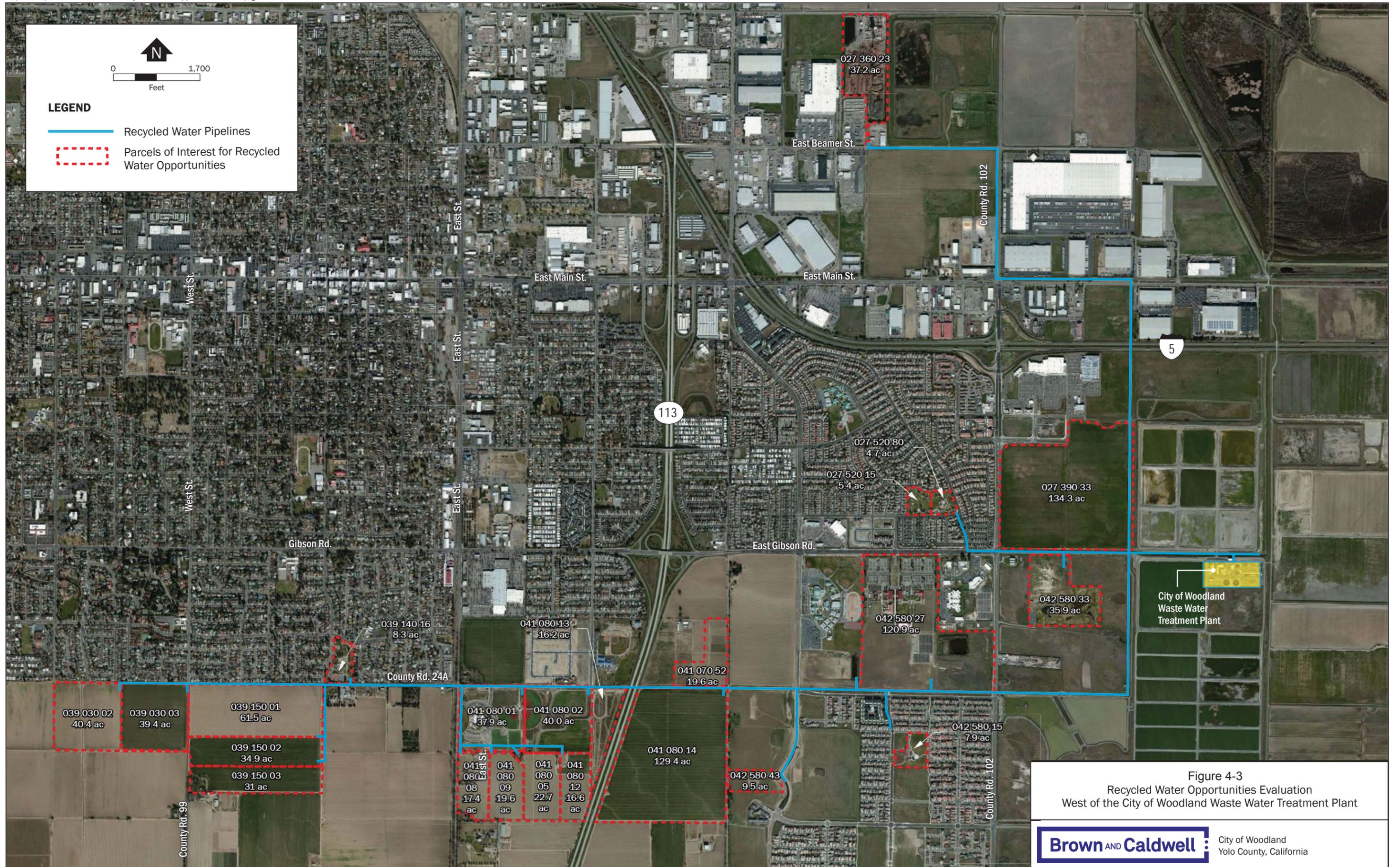


Figure 4-3
 Recycled Water Opportunities Evaluation
 West of the City of Woodland Waste Water Treatment Plant

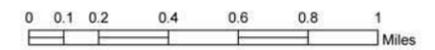
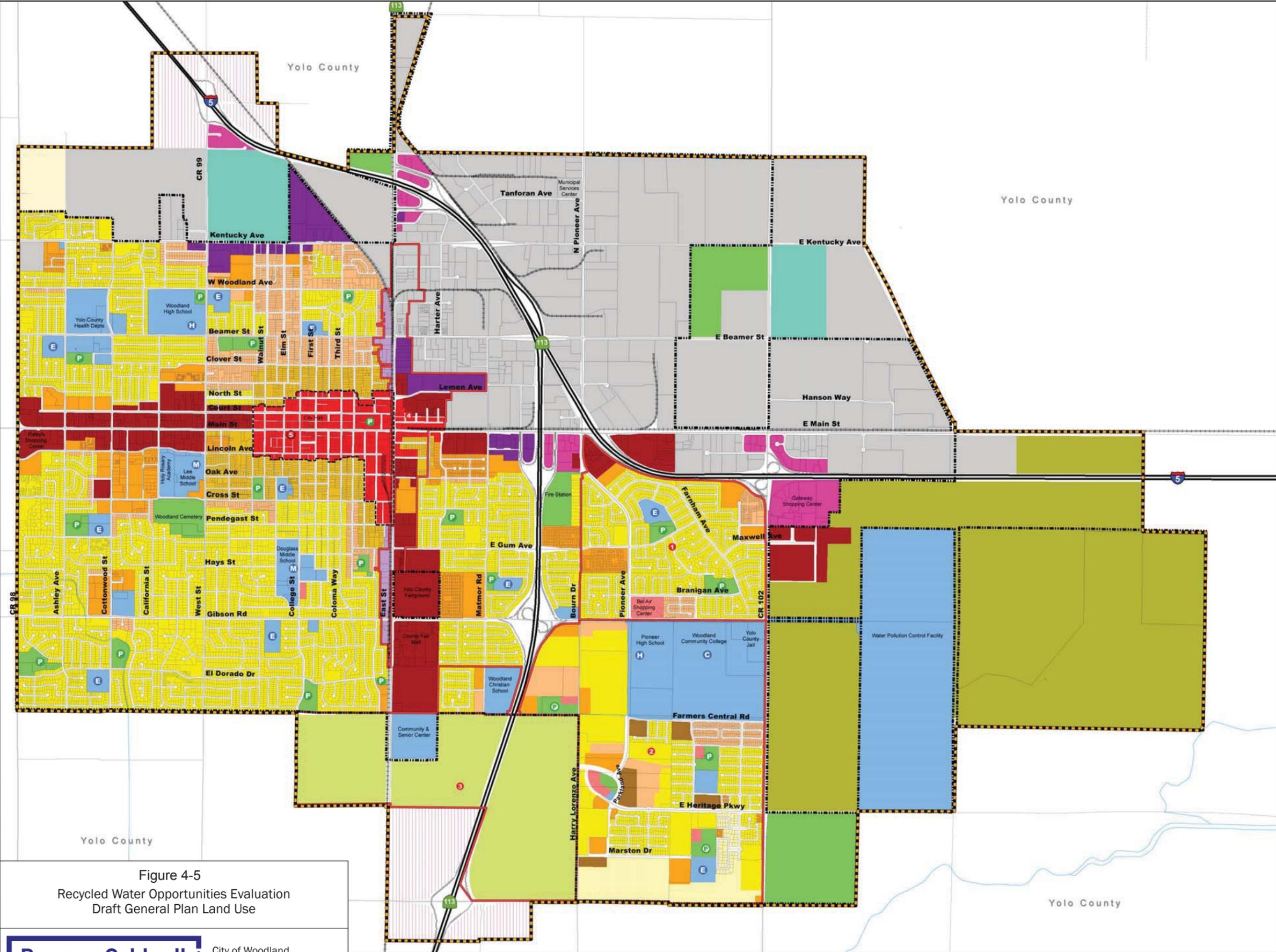
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 Yolo County, California

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General Plan Land Use

- Land Use Designations**
- Residential**
- Rural (0.0 – 2.0 dwelling units/gross acre)
 - Very Low Density (1.0 – 4.0 du/gross ac)
 - Low Density (3.0 – 8.0 du/gross ac)
 - Medium Low Density (5.0 – 12.0 du/gross ac)
 - Neighborhood Preservation (3.0 – 8.0 du/gross ac)
 - Medium Density (8.0 – 15.0 du/gross ac)
 - High Density (16.0 – 25.0 du/gross ac)
 - Planned Neighborhood (1.0 – 25.0 du/gross ac)
- Commercial**
- Neighborhood Commercial
 - Central Commercial
 - General Commercial
 - Highway Commercial
 - Service Commercial
 - Mixed Use
- Industrial**
- Business Park
 - Industrial
- Other**
- Open Space
 - Public Service
 - Urban Reserve
 - Undesignated
- Schools**
- Elementary School
 - Middle School
 - High School
 - College
- Specific Plans**
- Southeast Area
 - Spring Lake
 - Spring Lake Master Plan Remainder
 - East Street
 - Downtown
 - Park
 - Proposed Park



This map includes all lands within the voter approved Urban Limit Line.
 City of Woodland, March 2013
 Technology Services GIS
 Source: Woodland Planning Dept

Figure 4-5
 Recycled Water Opportunities Evaluation
 Draft General Plan Land Use

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Section 5

Evaluation of Alternatives for Water Reuse

5.1 Screening and Grouping of Alternatives – Eastern Properties

The eastern fields were grouped into fields unlikely to be planted with rice (East Group 1) and fields that were likely to have rice planted at some point in their crop rotation (East Group 2).

5.1.1 East Group 1 Parcels – Non-rice

The non-rice parcels were identified in Figure 4-2. Planting for the parcels in the Cache Creek Settling Basin and the Yolo Bypass can sometimes be delayed until late May or early June in a wet year. The Conaway parcels are typically planted to tomatoes, corn, safflower, and other field crops. The other parcels in the Cache Creek Settling Basin are also planted to various field crops. The City's 427 acre parcel in the Yolo Bypass is currently on a 3 year lease out to a farmer for organic field crop production. The parcel north of the City's parcel in the Yolo Bypass has been planted to rice in the past, but could be limited to other crops under a suitable agreement with the City.

Irrigation tailwater runoff from the fields in the Cache Creek Settling Basin enters the low water Cache Creek Channel. When this occurs, this would likely be considered a discharge to waters of the state, and all commensurate surface water discharge requirements would apply. The requirements, which would likely be identical to requirements in the City's most recent permit, can probably be applied back at the WPCF discharge. Alternatively, it may be possible to retain tailwater at the low ends of the fields.

The City-owned parcels farmed by PCP comprise a total of 890 acres, of which PCP farms about 650 acres in any given year. The remainder of the land is used for land application of semi-solid organic wastes or is unusable because of the presence of berms, fill, or other conditions.

The potential annual and peak month water use rates of Group 1 parcels is shown in Table 5-1.

Table 5-1. East Group 1 Parcels Water Use Rates

Area	Estimated Irrigation Area	Annual Water Use, ac-ft	Peak Season Demand, mgd
Cache Creek Settling Basin	1,311	4,217	13.1
Yolo Bypass	813	2,615	8.1
Pacific Coast Producers	650	650	0
TOTAL	2,774	7,482	21.2

The potential water use from all the parcels far exceeds the current 5 mgd of effluent available from the WPCF. The area that could be irrigated with only the 5 mgd of available recycled water would be approximately 500 acres. Therefore the preferred parcels would be those that could be supplied with water most easily and have the best tailwater control possibilities. These would likely be the western Conaway parcels in the Cache Creek Settling Basin, the City’s parcel in the Yolo Bypass, and the PCP parcels.

The western Conaway parcels in the Cache Creek Settling Basin and the PCP parcels could both be served by a pipeline from the WPCF discharge to and just past the RD 2035 High Line Canal. An 18 inch diameter would handle up to approximately 7 mgd. Existing conveyance facilities could be used to move the water from the end of the pipeline to the fields. The City’s parcel in the Yolo Bypass can be supplied with water directly from the existing outfall pipeline. Some minor water control facilities would be needed to distribute the recycled water on the City’s parcel.

Possible future infrastructure for the recently proposed development east of the WPCF would require a pump station, storage tank, mainline, and purple pipe distribution system constructed prior to or concurrently with the development construction.

5.1.2 East Group 2 Parcels – Rice Stubble

It was assumed that these parcels would only accept water during two months in the late fall for rice stubble decomposition. It was also assumed that these parcels could be supplied with water from the RD 2035 High Line Canal. The potential water demand of the Group 2 parcels was assumed to be 0.5 feet per month, or 810 acre-feet/month (8.5 mgd) for the 1,620 net irrigated acres identified.

The 8.5 mgd potential demand is much greater than the available flow from the WPCF, therefore only a portion of the identified parcels could be served. Most likely, rice decomposition water would be blended with diverted Sacramento River water within the overall Conaway water distribution system rather than be dedicated to specific isolated parcels anyway.

The facilities required to serve water to Group 2 and other parcels for rice decomposition water would be the same 18 inch pipeline and related facilities to convey the WPCF effluent to the RD 2035 High Line Canal. If the pipeline is constructed to serve Group 1 parcels, there would be no additional cost to serve Group 2 parcels in the late fall months.

5.1.3 Costs of Supplying Recycled Water to Eastern Parcels

Estimated total costs and costs per acre-foot for supplying recycled water to the eastern parcels are shown in Table 5-2. The capital costs for reaching the Group 1 fields include \$82,000 for a pipeline, \$40,000 for valves and a tie-in and \$100,000 for permitting, administrative, and miscellaneous costs. A recycled water storage tank was assumed to not be needed because of flexibility in the operation of the RD 2035 High Line Canal. Although a survey would still need to be performed, there appears to be enough head drop between the UV disinfection channel at the WPCF and the RD 2035 High Line Canal to allow gravity flow to the canal. If some of the preferred parcels become unavailable in the future, the costs for extending service to other nearby Group 1 parcels would be relatively small. The incremental costs for serving Group 2 fields would only be administrative and permitting costs.

User Group Description	Potential Demand, mgd	Capped Annual Demand, ac-ft/yr	Incremental Capital Cost	Incremental Cost/af
Group 1 – Field crops (non-rice)	21.2	2,469	\$222,000	\$17.20
Group 2 – Rice decomposition water	8.5	1,332	\$30,000	\$11.80



5.1.4 Issues and Comparison with Other Water Supply Sources

As mentioned previously, the California Rice Commission discouraged the use of recycled water for rice crop irrigation because of international marketing considerations. The use of recycled water for irrigating organic field crops could also have marketing related issues. Other than crop marketing issues, the main issues with regards to supplying recycled water to eastern parcels would be the time and effort involved in setting up agreements with farmers, obtaining a water reclamation permit, and performing required monitoring. However, it would be technically possible to begin providing recycled water for crop irrigation on eastern parcels even before the surface water supply project is complete.

Based on recent capital and operational cost estimates for irrigation wells as part of another recent study for Glenn County, the cost of groundwater from new wells is roughly \$65 per acre-foot for a 1,500 gpm well, and somewhat less for a larger well. The pumping costs for Sacramento River water for Conaway Ranch are roughly only about \$25 per acre-foot not including maintenance costs for the water distribution system. However, the value of Sacramento River water in the summer is up to \$400 per acre-foot as evidenced by the water sale from Conaway Ranch to the Woodland-Davis Clean Water Agency and other recent water sales. Based on cost comparisons, supplying recycled water to the Group 1 eastern parcels during the irrigation season would be economically viable. Additional economic considerations are discussed later in Section 6, Recommended Alternatives.

Even though the cost of alternative water supplies is very low for fall rice stubble decomposition water (about \$25 per acre-foot marginal cost), supplying water to Group 2 parcels for rice stubble decomposition would still be economically viable. One other consideration for the use of recycled water for rice stubble decomposition in the late fall months is that residual nutrients in the recycled water would probably help speed the decomposition process.

Although cost estimates were not prepared for serving recycled water to new possible development east of the WPCF, the costs for serving large landscaped areas would likely be similar to or slightly less than the costs for serving similar western parcels, which are discussed later in this report.

5.2 Screening and Grouping of Alternatives – Western Properties

The western parcels were grouped by general priority of supply based on the costs of likely alternative supply. Group 1 included urban park, sporting, and landscape uses, where the alternative water supply would either be potable water or small wells. Pioneer High School was not included because it recently completed construction of a dedicated irrigation well. Group 2 was comprised of agricultural parcels that could potentially have a long term demand for recycled water. Group 3 was comprised of only the Woodland Biomass power generation plant. Group 4 was comprised of agricultural parcels that had been identified in the General Plan Update as potential future development areas. All the western parcels and their corresponding group numbers are shown in Figure 5-1. The Draft Woodland General Plan Update land use map for the area of interest was shown in Figure 4-4.

The pipeline to serve all Group 1 parcels would follow the path of the planned southern surface water distribution pipeline, extending west past Highway 113 and East Street all the way to Crawford Park. A short branch would serve the Gateway II Development, Mountain Air Golf Course, and Slaven Park. The pipeline would extend further west to County Road 99 to serve all the Group 2 parcels. For service to Woodland Biomass (Group 3), a separate pipeline would follow the path of the planned northern surface water distribution pipeline under Interstate 5 to Main Street. The Group 3 pipeline would likely then follow County Road 102 and Beamer Street or other suitable alignment through the industrial area towards Woodland Biomass, the assumed base case industrial user. The Group 4 pipeline path would essentially be the same as the Group 2 pipeline, but the pipeline would have greater capacity to be capable of supplying the Group 4 parcels along the way.

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5.2.1 Costs of Supplying Recycled Water to Western Parcels

The estimated capital and total costs for providing service to the 4 western parcel groups are shown in Table 5-3. Cost estimating details are provided in Appendix C.

The capital costs for reaching the Group 1 fields include approximately \$1.4M for a pipeline and appurtenances, \$0.2M for a pump station and \$0.5M for permitting, administrative, and miscellaneous costs. A recycled water storage tank was not included, but could be necessary depending upon demand scheduling. Adding Group 2 users, the pipeline diameters are larger and the length is assumed to be extended to reach users at County Road 99 (West Street).

The industrial user assumed for Group 3 is the Woodland Biomass power generation facility. Should the use of recycled water become attractive to Woodland Biomass, there may be other industrial users that would be interested in recycled water supplied from the same pipeline. The historical annual average use rate for Woodland Biomass has been slightly under 300 gpm. For evaluation purposes, a pipeline capacity of 500 gpm was assumed. The recycled water supply flow rate could be adjusted to approximately match demand through the use of telemetry and variable frequency drive motors on the supply pumps. It was assumed that Woodland Biomass could provide any additional equalization storage needed for their own use.

The addition of Group 4 users resulted in larger diameter pipeline segments and a larger pump station. While Group 4 costs are shown for comparative purposes, it is important to consider that there would not be sufficient recycled water to serve all potential Group 1 through 4 customers.

User Group	Cumulative Demand ac-ft/yr	Cumulative Capital Cost Million \$	Annualized Capital Cost \$/af	Unit Total Cost, \$/af	Incremental Cost, \$/af
1 City parks and high value users	881	\$2.1M	\$193	\$270	\$270
2 Possible long term ag	1,521	\$4.1M	\$215	\$297	\$335
3 Industrial user	2,005	\$5.2M	\$210	\$290	\$268
4 Possible intermediate-term ag	2,695	\$7.3M	\$218	\$301	\$332

Note:
Costs shown are preliminary planning level costs based on generalized unit costing assumptions. Effects of site specific conditions are not included.

The results shown in Table 5-3 are interesting in that there do not appear to be strong economies of scale to providing recycled water to additional users along the proposed main pipeline alignment for Groups 1, 2, and 4. The estimated incremental costs of supplying recycled water are in the general range of \$250 to \$350 per ac-ft.

5.2.2 Issues and Comparison with Alternative Water Sources

The issues and cost comparisons for the western parcels are somewhat different than for the eastern parcels.

5.2.3 Parks and Other Urban Users

The alternative water sources available to the urban users would be potable water from the City water system and dedicated small wells. The cost of potable water for large commercial users is scheduled to rise from the current \$2.77 per hundred cubic feet (\$1,200 per ac-ft) to \$5 per hundred cubic feet (\$1,900 per ac-ft) by 2016. Brown and Caldwell released a draft analysis of water management and alternative water



sources for parks in the City of Davis (Brown and Caldwell, 2013). The replacement capital cost of wells ranged from approximately \$3,000 to \$30,000 per ac-ft of annual demand depending upon the size of the parks and whether an existing municipal well could be converted to an irrigation well or whether a new well was needed. Although total costs per ac-ft were not presented in the Davis study, the capital cost range of \$3,000 to \$30,000 per ac-ft of annual demand can be compared with approximately \$2,300 ($\$2,030,210 / 881$ from Table 5-3) per ac-ft of annual demand for providing recycled water to parks in western parcels Group 1. While the economics could change somewhat with lower cost wells or with higher unit costs for the recycled water system, this comparison does show that recycled water is likely to be cost competitive with dedicated wells for irrigating Group 1 parks and greenbelts.

5.2.4 Agricultural Irrigation Users (West Groups 2 and 4)

The western parcels that are currently in irrigated agriculture usage depend on groundwater wells for irrigation water. The fully amortized cost of groundwater wells is approximately \$65 per ac-ft. Therefore the irrigated agriculture parcels (both long term and intermediate term) would not likely be interested in receiving recycled water unless they wanted water with lower boron content and/or some kind of subsidy was available. The most likely candidates would be those interested in planting walnuts or some other high cash value crop with a sensitivity to boron.

5.2.5 Woodland Biomass Industrial User

The Woodland Biomass powerplant uses cooling water as part of its power generation operation. At year 2016 rates, the cost of potable water would be \$1,900 per ac-ft versus approximately \$270 per ac-ft for recycled water. Therefore recycled water would be far less costly than potable water from the City.

Woodland Biomass could also construct a deep well. Based on estimates for a well for Woodland Biomass performed several years ago, the capital cost would likely be in the range of \$650,000 to \$900,000. In a draft 2009 report to the City of Woodland (Brown and Caldwell, 2009), the overall cost of water from a larger well that would supply water to both the City and Woodland Biomass was estimated at \$0.46/hcf (\$200/ac-ft), not including manganese treatment and assuming PG&E power costs. Economies of scale for well construction would imply that the cost of water from a smaller dedicated well for Woodland Biomass alone would be on the order of roughly 50% greater than the \$200/ac-ft cost in the 2009 study, making the recycled water cost competitive with water from a new deep well. There would also be a small risk of not finding adequate quality and quantity of water for a new deep well at the Woodland Biomass site.

Section 6

Recommended Alternatives

6.1 Comparison of Alternatives

The recycled water supply project alternatives are listed in Table 6-1 along with cost and subjective advantages and disadvantages.

Table 6-1. Comparison of Recycled Water Supply Project Alternatives

Alternative	Cost, \$/af	Cost of Other Water Sources for Area	Advantages	Disadvantages
E1	\$17	\$65	Economical; physically easy to implement	Additional permitting and agreements required; only summer irrigation season usage.
E2	\$11	\$25	Late fall use	Additional permitting and agreements required
W1	\$259	\$1,900 or \$300	Economical; lower boron, softer water; possible financing incentives	Public perception; permitting
W2	\$333	\$65	Low boron, softer water	Relatively expensive for agriculture
W3	\$268	\$1,900 or \$300	Cost competitive; lower risk; year 'round use	Street disruption during construction
W4	\$296	\$65	Low boron, softer water	Relatively expensive for agriculture

E1 – Eastern Parcels Group 1, E2 – Eastern Parcels Group 2

W1 – Western Parcels Group 1, W2 – Western Parcels Group 2, W3 – Western Parcels Group 3, W4 – Western Parcels Group 4

Supplying water to the eastern parcels is clearly very economical because the location of the effluent discharge is so close to the RD 2035 Road 103 High Line Canal and other points of distribution and use. The City could charge users a price nearly equal to the cost of alternative water and use that revenue to offset WPCF operational costs. Structuring agreements with users on eastern parcels should also be performed such that the City is not required to supply water in all years and could possibly sell its recycled water on the open market during drought years at a much higher price.

A specific benefit to Conaway Ranch from utilizing recycled water would be to reduce groundwater pumping associated with its original sale of surface water to the Woodland-Davis Clean Water Agency. This would make it easier for Conaway to receive a no-impact or low-impact finding from the State Water Board on its groundwater pumping to offset its surface water sale.

The main challenges with supplying recycled water to the eastern parcels would be developing agreements with end users and obtaining permits for the recycled water use. These are not seen as difficult challenges at this time. Monitoring and tailwater control will need to be integral with any implementation. The other disadvantage of a program supplying recycled water to eastern parcels is that the supply window would be only a few months out of the year. Supplying water for rice decomposition in the late fall would increase the number of months of supply, even though the economics are not as favorable as during the irrigation season.

The cost of supplying recycled water to the western parcels is over an order of magnitude greater than the costs of supplying eastern parcels. However, the cost is in the same range as the best alternatives for the park and industrial water users. The cost would be too high for most agricultural irrigation users, but the cost could possibly be acceptable for agricultural irrigation use on high cash value crops that are especially sensitive to boron.

Along with higher costs of supply for the western parcels, the other main disadvantage for recycled water use on western park parcels would be possible adverse public perception for irrigation of parks with reclaimed water.

6.2 Recommended Alternatives

Since most of the alternatives are economically viable and there is a limited amount of potential recycled water compared to the potential demands, agreements and institutional or administrative factors may prove to be deciding for any particular alternative. Therefore, the alternatives should be pursued in order of priority based on the potential net revenue benefits and the percent of the year when the demand would occur. The recommended order of priority is:

1. East Parcels Group 1
2. East Parcels Group 2
3. West Parcels Group 3
4. West Parcels Group 1
5. West Parcels Group 4
6. West Parcels Group 2

Even though the eastern parcels appear to have a higher priority based purely on costs, there may be political and financing benefits to serving some of the higher priority western parcels in addition to some of the eastern parcels.

6.3 Other Benefits of a Recycled Water Program

A recycled water program would be consistent with the State's goal of increasing recycled water use to 1 million ac-ft per year. There may be funding or financial incentives offered to help the State achieve this goal, which would further reduce the cost of a recycled water program.

Other potential benefits of a recycled water program include:

1. Reduced surface discharge and loading to surface waters
2. Possible low interest rate and grant funding
3. Setting the City up to be able to sell effluent as supply water on the open market in drought years
4. Putting water to local beneficial use
5. Providing in-lieu recharge of local aquifers

6.4 Establishing Precedence to Enable Possible Future Marketing of Tertiary Effluent

Given the proper positioning and circumstances, the City could potentially sell a portion of its water to entities outside of Yolo County during drought years. This could apply to either the fresh water supply and/or treated wastewater, depending upon conditions and precedents.

Tertiary treatment in particular can provide water for unrestricted irrigation reuse and water sales. Water code section 1485 allows those who discharge treated wastewater to the San Joaquin River to file an appropriative water right application. Assembly Bill (AB) 134 was passed by the Legislature and signed by the Governor in September 2011. It enables Sacramento Regional County Sanitation District (SRCSD) to file an application to obtain a water right permit for an equivalent amount of high-quality recycled water that SRCSD treats and discharges to the Sacramento River, subject to the protection of the rights of any legal user of the water. Therefore there is legal precedence for establishing rights to tertiary effluent and allowing it to be sold on the open market. In addition, there are no explicit conditions or requirements mandating treated wastewater return flow listed in the City's area-of-origin water right decision (SWRCB, 2011).

A detailed discussion of water rights and marketing is contained in Appendix D. While Appendix D is from a report for the City of Davis, the same issues and conclusions would apply to Woodland. Selling recycled water to local users would help establish precedence and rights to the tertiary effluent that should enable the sale of effluent on the open market. Should treated effluent be reused or sold to local irrigators, the reuse would also offset agricultural groundwater pumping, thereby increasing groundwater in storage.

Selling tertiary effluent on the open market during drought years would provide substantial revenue to the City. The open market price for short term water transfers was \$275/ac-ft during the 2009 drought and is currently estimated by the Metropolitan Water District of Southern California to be \$290/ac-ft at the Delta.

Section 7

Conclusions and Implementation Steps

After completion of the surface water supply project, effluent from the Woodland WPCF will be a good quality source of water for irrigation and industrial uses. Even including conveyance facilities, the recycled water should be competitive in cost with potable water for irrigation use within City limits and with groundwater or surface water for agricultural irrigation reuse east and northeast of the WPCF. The recycled water would not be cost competitive with dedicated wells for properties west of the WPCF, but would provide higher quality water for crops and plants that are sensitive to boron.

Developing a water recycling program can be done in accordance with new state guidelines. Funding could possibly be obtained to offset some of the cost of a program. A large potential benefit would be to establish priority to beneficial use of the water, possibly enabling lucrative water transfer sales during drought years.

7.1 Discussions with Potential Users

The next step would be to continue discussions with major potential recycled water users such as Conaway Ranch, Woodland Biomass, the City Parks Department, and PCP. Discussions should also begin with other potential eastern and western parcel owners to gauge the level of interest in receiving recycled water.

After these additional discussions, the cost model developed as part of this study can be modified to focus on the most interested potential users. Updated costs would then be utilized in developing statements of interest and ultimately in developing recycled water supply agreements with users.

7.2 Permitting

Once the scope and participating parcels for a recycled water program have been developed, the City will need to apply for a water recycling permit with the Regional Water Board. CEQA compliance in the form of a mitigated negative declaration is also likely to be needed for the program.

The State Water Board has mandated that all recycled water programs shall have salt and nutrient management plans (SNMPs) to protect underlying groundwater basins. It may be possible to include the Woodland recycled water program in a regional SNMP, depending upon the outcome of the CV-SALTS process currently underway for the Sacramento Valley.

7.3 Design and Construction of Recycled Water Supply Infrastructure

Pipelines to serve western parcels would be most economical if it could be constructed at the same time the construction of the south Woodland surface water supply pipelines. The design of the surface water pipelines is currently scheduled to be completed by 2016.

7.4 Planning to Take Advantage of Water Marketing Opportunities

It is recommended that the City develop plans for water marketing, or monetizing the City's water resources regardless of what other water management options are implemented. All management options that reduce water demand, including actions taken in the last 5 years, should be documented. The documentation should state that one of the reasons for the demand reduction actions was to provide flexibility in the use of available water resources, including potentially making water available for sale to outside entities during appropriate periods. The City should work with Yolo County to set up conditions that would allow for water sales to entities out of the county. The City should also establish precedence to beneficial use of its water through agricultural or urban irrigation of recycled water and of water made available through other measures.

Section 8

Limitations

This document was prepared solely for City of Woodland in accordance with professional standards at the time the services were performed and in accordance with the contract between City of Woodland and Brown and Caldwell dated September 25, 2012. This document is governed by the specific scope of work authorized by City of Woodland; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by City of Woodland and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

Section 9

References

Brown and Caldwell, 2009. Draft General Recommendations and Consideration in the Negotiation of Costs between Woodland Biomass and the City of Woodland. October 13.

Brown and Caldwell, 2013. Draft Parks and Greenbelts Water Management Plan. October 18.

California Rice Communication, 2013. Personal phone call with Paul Buttner. June.

SWRCB, 2011.

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Appendix A: Recycled Water Regulations

Table A-1. Summary of California Code of Regulations, Title 22, Division 4

Article No.	Description
1	Provides definitions used in the document.
2	Defines sources of recycled water.
3	Provides information on water quality parameters required for various uses of recycled water, namely: Irrigation Water impoundments Cooling water for industrial and commercial facilities Other purposes
4	Specifies requirements governing used areas; i.e., how and where recycled water may be used. For example, no impoundments of tertiary disinfected recycled water are allowed within 100 feet of any domestic water supply well.
5	Provides guidelines on dual-plumbed recycled water systems, including system design and operation requirements.
5.1	Provides guidelines on groundwater recharge applications. This article has now been superseded by the Groundwater Recharge Reuse Projects regulation, discussed in Section 2.5.1 of this document.
5.5	Provides guidelines on acceptance of other methods of treatment for producing recycled water.
6	Lists the recycled water sampling and analysis requirements.
7	Describes the requirements for developing an engineering report and the operational requirements for recycled water facilities.
8	Describes the requirements for constructing a recycled water production system.
9	Lists the reliability requirements for primary effluent. Use of primary effluent for recycled water applications is no longer permitted.
10	Provides the reliability requirements for full treatment of wastewater during the recycled water production process. Requirements are listed for various treatment processes such as primary and secondary sedimentation, biological treatment, coagulation, filtration, and disinfection.

Appendix B: Boron Sensitivity of Crops



Table B-1. Relative Boron Threshold Tolerance of Agricultural Crops and Landscape plants ^{a, b}

Agricultural Crops	Ornamentals
<p><u>Very sensitive</u> (<0.5 mg/L) Lemon (<i>Citrus limon</i>) Blackberry (<i>Rubus sp.</i>)</p>	<p><u>Very sensitive</u> (<0.5 mg/L) Oregon grape (<i>Nahonia Aquifolium</i>) Photinia (<i>Photinia X Fraseri</i>) Xylosma (<i>Xylosma congestum</i>) Thomy elaeagnus (<i>Elaeagnus pungens</i>) Laurustinus (<i>Viburnum Tinus</i>) Wax-leaf privet (<i>Ligustrum japonicum</i>) Pineapple guava (<i>Fejoa Sellowiana</i>) Spindle tree (<i>Euongmus japonica</i>) Japanese pittosporum (<i>Pittosporum Tobira</i>) Chinese holly (<i>Ilex comuta</i>) Juniper (<i>Juniperus chinensis</i>) Yellow sage (<i>Lantana Camara</i>) American elm (<i>Ulmus americana</i>)</p>
<p><u>Sensitive</u> (0.5 – 1.0 mg/L) Avocado (<i>Persea americana</i>) Grapefruit (<i>Citrus X paradisi</i>) Orange (<i>Citrus sinensis</i>) Apricot (<i>Prunus armeniaca</i>) Peach (<i>Prunus Persica</i>) Cherry (<i>Prunus avium</i>) Plum (<i>Prunus domestica</i>) Persimmon (<i>Diospyros Kaki</i>) Fig, kadota (<i>Ficus carica</i>) Grape (<i>Vitis vinitera</i>) Walnut (<i>Juglans regia</i>) Pecan (<i>Carga illinoensis</i>) Cowpea (<i>Vigna unguiculata</i>) Onion (<i>Allium Cepa</i>) Garlic (<i>Allium sativum</i>) Sweet potato (<i>Ipomea Batatas</i>) Wheat (<i>Triticum aestivum</i>) Barley (<i>Hordeum vulgare</i>) Sunflower (<i>Helianthus annus</i>) Bean, mung (<i>Vigna radiata</i>) Sesame (<i>Sesamum indicum</i>) Lupine (<i>Lupinus Hartwegii</i>) Strawberry (<i>Fragaria sp.</i>) Artichoke, Jerusalem (<i>Helianthus tuberosus</i>) Bean, kidney (<i>Phaseolus vulgaris</i>) Bean, lima (<i>Phaseolus lunatus</i>) Peanut (<i>Arachis hgpogaea</i>)</p>	<p><u>Sensitive</u> (0.5 – 1.0 mg/L) Zinnia (<i>Zinnia elegans</i>) Pansy (<i>Viola tricolor</i>) Violet (<i>Viola odorata</i>) Larkspur (<i>Delphinium sp.</i>) Glossy abelia (<i>Abelia x grandiflora</i>) Rosemary (<i>Rosemarinus officinalis</i>) Oriental arborvitae (<i>Pelargonium X orientalis</i>) Geranium (<i>Pelargonium X hortorum</i>)</p>
<p><u>Moderately sensitive</u> (1.0 – 2.0 mg/L) Pepper, red (<i>Capsicum annuum</i>) Pea (<i>Pisum sativa</i>) Carrot (<i>Daucus carota</i>) Radish (<i>Raphanus sativus</i>) Potato (<i>Solanum tuberosum</i>) Cucumber (<i>Cucumis sativus</i>)</p>	<p><u>Moderately sensitive</u> (1.0 – 2.0 mg/L) Gladioli (<i>Gladiolus sp.</i>) Marigold (<i>Calendula officinalis</i>) Poinsettia (<i>Euphorbia pulcherrima</i>) China aster (<i>Callistephus chinensis</i>) Gardenia (<i>Gardenia sp.</i>) Southern yew (<i>Podocarpus macrophglus</i>) Bruch cherry (<i>Sgzzgium paniculatum</i>) Blue dracaena (<i>Cordgline indivisa</i>) Ceniza (<i>Leucophglum frutescens</i>)</p>

Table B-1. Relative Boron Threshold Tolerance of Agricultural Crops and Landscape plants ^{a, b}	
Agricultural Crops	Ornamentals
<p>Moderately tolerant (2.0 – 4.0 mg/L) Lettuce (<i>Lactuca sativa</i>) Cabbage (<i>Brassica oleracea capitata</i>) Celery (<i>Apium graveolens</i>) Turnip (<i>Brassica rapa</i>) Bluegrass, Kentucky (<i>Poa pratensis</i>) Oats (<i>Avena sativa</i>) Corn (<i>Zea Mays</i>) Artichoke (<i>Cynara scolymus</i>) Tobacco (<i>Nicotiana Tabacum</i>) Mustard (<i>Brassica juncea</i>) Clover, sweet (<i>Neilotus indica</i>) Squash (<i>Cucurbita Pepo</i>) Muskmelon (<i>cucumis melo</i>)</p>	<p>Moderately tolerant (2.0 – 4.0 mg/L) Bottlebrush (<i>Callistemon citrinus</i>) California poppy (<i>Eschscholzia californica</i>) Japanese boxwood (<i>Buxus microphylla</i>) Oleander (<i>Nerium Oleander</i>) Chinese hibiscus (<i>Hibiscus Rosa-sinensis</i>) Sweetpea (<i>Lathyrus odoratus</i>) Carnation (<i>Dianthus Caryophyllus</i>)</p>
<p>Tolerant (4.0 – 6.0 mg/L) Sorghum (<i>Sorghum bicolor</i>) Tomato (<i>Lycopersicon Lycopersicum</i>) Alfalfa (<i>Nedicago sativa</i>) Vetch, purple (<i>Vicia benghalensis</i>) Parsley (<i>Petroselinum crispum</i>) Beet, red (<i>Beta vulgaris</i>) Sugarbeet (<i>Beta vulgaris</i>)</p>	<p>Tolerant (6.0 – 8.0 mg/L) Indian hawthorn (<i>Raphiolepis indica</i>) Natal plum (<i>Carissa grandiflora</i>) Oxalis (<i>Oxalis Bowiei</i>)</p>
<p>Very tolerant (5.0 – 15.0 mg/L) Cotton (<i>Gossypium hirsutum</i>) Asparagus (<i>Asparagus officinalis</i>)</p>	

- a) Data taken from Maas.
- b) Maximum concentrations tolerated in soil water without yield or vegetative growth reductions. Boron tolerances vary depending upon climate soil conditions and crop varieties. Maximum concentrations tolerated in the applied irrigation water are approximately equal to these values for soil-water or slightly less.

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Appendix C: Cost Estimating Details

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Table C-1. East Parcels Area and Water Demand

Item	APN	Property Owner Description	Area, ac	Est. Net Area, ac	Zoning	Group	Average Annual Water Use, ac-ft	Peak Season Demand, ac-		Rice Decomp.	
								ft/month	mgd	Demand, ac-ft/month	mgd
1	027 390 20	Pacific Coast Producers	106	78	Agricultural	1	78	0	0.0	0	0.0
2	027 390 22	Pacific Coast Producers	320	234	Agricultural	1	234	0	0.0	0	0.0
3	027 390 23	Pacific Coast Producers	464	339	Agricultural	1	339	0	0.0	0	0.0
4	057 180 12	Conaway Preserve	512	460	Agricultural	1	1,481	437	4.6	0	0.0
5	027 350 03	Conaway Preserve	160	144	Agricultural	1	464	137	1.4	0	0.0
6	027 350 04	Conaway Preserve	159	143	Agricultural	1	460	136	1.4	0	0.0
7	057 170 01	Koerwitz; Jim & Courtlandt; Alis	245	220	Agricultural	1	708	209	2.2	0	0.0
8	057 170 03	City of Woodland	427	384	Agricultural	1	1,236	365	3.8	0	0.0
9	057 170 09	Koerwitz; Jim & Courtlandt; Alis	232	208	Agricultural	1	670	198	2.1	0	0.0
10	057 150 09	Neal Dow Family LP	626	563	Agricultural	1	1812	535	5.6	0	0
Total Group 1			3250	2774			7481	2018	21.2	0	0
11	027 390 04	Conaway Preserve	87	78	Agricultural	2	78	0	0.0	39	0.4
12	027 390 12	Conaway Preserve	169	153	Agricultural	2	153	0	0.0	76	0.8
13	042 020 06	Conaway Preserve	298	268	Agricultural	2	268	0	0.0	134	1.4
14	042 180 02	Conaway Preserve	164	147	Agricultural	2	147	0	0.0	74	0.8
15	042 180 13	Conaway Preserve	524	471	Agricultural	2	471	0	0.0	236	2.5
16	057 190 01	Conaway Preserve	130	117	Agricultural	2	117	0	0.0	59	0.6
17	057 190 11	Conaway Preserve	434	391	Agricultural	2	391	0	0.0	196	2.1
Total Group 2			1,806	1,626			1,626	0	0	813	8.5

Notes:

Groups

1 Minimal constraints on recycled water irrigation

2 Administrative or crop marketing constraints on recycled water irrigation

Assumes 1 foot per season water use by PCP

Assumes 0.5 ft/mo. For 2 months water use for rice stubble decomposition

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Table C-2. Eastern Parcels Estimated Costs

User Group	Number of Properties	Irrigation Area, ac	User Group Description	Potential Demand, mgd	Reasonable Future Capacity, mgd	Annual Demand, ac-ft/yr	Incremental Total Cost	Incremental Total Cost, \$/AFY	Total Annualized Cost \$/af	Other O&M, \$/af	Incremental Cost, \$/af
1	10	2774	Field crops (non-rice)	21.2	7.0	2,469	\$221,900	\$89.86	\$7.21	\$10.00	\$17.21
2	7	1626	Rice decomposition water	8.5	7.0	1,332	\$30,000	\$22.52	\$1.81	\$10.00	\$11.81

Multiplier for 20 years @ 5% 0.080

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Table C-3. West Area Parcels - Water Use and Cost Assumptions

Annual Water use

Field Crops	3.22	ft/yr
Orchard	3.88	ft/yr
Turf	3.98	ft/yr
Landscape	3.49	ft/yr
July Eto	0.27387	in/d
July Field Crops Kc	1.08	
July Orchard Kc	0.96	
July Turf Kc	0.90	
July Landscape Kc	0.80	
Assumed Irrig. Efficiency	0.80	
Max. Pipe Velocity	6	ft/sec
Pipeline Cost	10	\$/ft/in (Unimproved)
Pipeline Cost	15	\$/ft/in (Improved)
Pipeline Life	20	
Interest Rate	5%	

Table C-4. West Parcels Group 1 Water Demands and Estimated Costs

APN	Property Owner Description	Approx. Area, Acres	Estimated Net Irrig. Area	Turf	Landscape	Field Crops	Orchards	Average July Kc	Group	Zoning	Zoning Comments	Additional Comment	Avg. Annual Water Use, ac-ft	Avg. July Loading Rate, ac-ft/day	gpm	Distance, ft	Cumulative Flow, gpm	Calculated Min. Pipe Size, in	Pipe Size, in	Estimated Pipeline Cost per Segment
027 390 33	WOODLAND DEVELOPMENT CO LLC	134.3	20.1		20.1			0.80	1	Agricultural	Within City Boundaries	Gateway II Development	70	0.460	104	2,040	1,290	9	10	\$ 204,000
042 580 33	BARTON TRUST	35.9	34.0	34.0				0.90	1	Agricultural	Within City Boundaries	Mountain Valley Golf Course	135	0.873	198	1,190	249	4	4	\$ 71,400
027 520 15	WOODLAND CITY OF	5.4	4.9	3.9	1.0			0.88	1	City Park	Within City Boundaries	Pioneer Park	19	0.123	28	2,550	52	2	2	\$ 76,500
027 520 80	WOODLAND CITY OF	4.7	4.2	3.4	0.8			0.88	1	City Park	Within City Boundaries	Pioneer Park	16	0.105	24	510	24	1	2	\$ 15,300
042 580 27	Woodland Comm. College	120.9	100.0	100.0				0.90	1	Public School	Within City Boundaries	Community College Expansion?	398	2.568	581	6,460	937	8	8	\$ 516,800
042 580 15	City of Woodland	7.9	5.0	4.0	1.0			0.88	1	Agricultural	Within City Boundaries	Slaven Park	19	0.126	28	850	28	1	2	\$ 25,500
042 580 43	Woodland springlake partners LP	9.5	6.0	5.0	1.0			0.88	1	Agricultural	Within City Boundaries	Park	23	0.151	34	1,870	34	2	2	\$ 56,100
041 070 52	Optomistic Partners LLC	19.6	15.0	12.0	3.0			0.88	1	Agricultural	Within City Boundaries	Future Park	58	0.377	85	3,910	293	4	4	\$ 234,600
041 080 02	WOODLAND CITY OF	40.0	20.0	15.0	5.0			0.88	1	City Services	Within City Boundaries	Sports Center, more later?	77	0.499	113	2,720	208	4	4	\$ 108,800
041 080 01	WOODLAND CITY OF	37.9	10.0	9.0	1.0			0.89	1	City Services	Within City Boundaries	Sports Center, more later?	39	0.254	57	1,360	95	3	4	\$ 54,400
039 140 16	WOODLAND CITY OF	8.3	6.5	6.0	0.5			0.89	1	City Park	Within City Boundaries	Crawford Park	26	0.165	37	3,400	37	2	2	\$ 68,000
Totals		424	121									Totals	881		1,290	26,860				\$ 1,431,400
													Pump Station	54	HP			Pump Sta. Cost	\$ 200,000	
																		E, A, &C at 30%	\$ 489,420	
																		Total Cost	\$ 2,120,820	

Table C-5. West Parcels Group 2 Water Demands and Estimated Costs

APN	Property Owner Description	Approx. Area, Acres	Estimated Net Irrig. Area	Turf	Landscape	Field Crops	Orchards	Average July Kc	Group	Zoning	Zoning Comments	Additional Comment	Avg. Annual Water Use, ac-ft	Avg. July Loading Rate, ac-ft/day	gpm	Distance, ft	Cumulative Flow, gpm	Calculated Min. Pipe Size, in	Pipe Size, in	Estimated Pipeline Cost per Segment		
027 390 33	WOODLAND DEVELOPMENT CO LLC	134.3	20.1		20.1			0.80	1	Agricultural	Within City Boundaries	Gateway II Development	70	0.460	104	2,040	2,677	14	14	\$285,600		
042 580 33	BARTON TRUST	35.9	34.0	34.0				0.90	1	Agricultural	Within City Boundaries	Mountain Valley Golf Course	135	0.873	198	1,190	249	4	4	\$71,400		
027 520 15	WOODLAND CITY OF	5.4	4.9	3.9	1.0			0.88	1	City Park	Within City Boundaries	Pioneer Park	19	0.123	28	2,550	52	2	2	\$76,500		
027 520 80	WOODLAND CITY OF	4.7	4.2	3.4	0.8			0.88	1	City Park	Within City Boundaries	Pioneer Park	16	0.105	24	510	24	1	2	\$15,300		
042 580 27	Woodland Comm. College	120.9	100.0	100.0				0.90	1	Public School	Within City Boundaries	Community College Expansion?	398	2.568	581	6,460	2,324	13	14	\$904,400		
042 580 15	City of Woodland	7.9	5.0	4.0	1.0			0.88	1	Agricultural	Within City Boundaries	Slaven Park	19	0.126	28	850	28	1	2	\$25,500		
042 580 43	Woodland springlake partners LP	9.5	6.0	5.0	1.0			0.88	1	Agricultural	Within City Boundaries	Park	23	0.151	34	1,870	34	2	2	\$56,100		
041 070 52	Optomistic Partners LLC	19.6	15.0	12.0	3.0			0.88	1	Agricultural	Within City Boundaries	Future Park	58	0.377	85	3,910	1,681	11	12	\$703,800		
041 080 02	WOODLAND CITY OF	40.0	20.0	15.0	5.0			0.88	1	City Services	Within City Boundaries	Sports Center, more later?	77	0.499	113	2,720	1,595	10	10	\$272,000		
041 080 01	WOODLAND CITY OF	37.9	10.0	9.0	1.0			0.89	1	City Services	Within City Boundaries	Sports Center, more later?	39	0.254	57	1,360	1,482	10	10	\$136,000		
039 140 16	WOODLAND CITY OF	8.3	6.5	6.0	0.5			0.89	1	City Park	Within City Boundaries	Crawford Park	26	0.165	37	3,400	1,425	10	10	\$340,000		
039 150 01	BEEMAN TIMOTHY L	61.5	60.0			60.0		1.08	2	Agricultural	Outside City Boundary	Ag	193	1.849	418	300	1,387	10	10	\$30,000		
039 150 02	FRANKE HAROLD R ESTATE	34.9	32.0			32.0		1.08	2	Agricultural	Outside City Boundary	Ag	103	0.986	223	1,000	969	8	8	\$80,000		
039 150 03	FRANKE HAROLD R ESTATE	31.0	30.0			30.0		1.08	2	Agricultural	Outside City Boundary	Ag	97	0.924	209	500	746	7	8	\$40,000		
039 030 03	JENNESS BENNING F	39.4	38.0			38.0		1.08	2	Agricultural	Outside City Boundary	Ag	122	1.171	265	2,600	537	6	6	\$156,000		
039 030 02	HILLEBY MARTHA I	40.4	39.0			39.0		1.08	2	Agricultural	Outside City Boundary	Ag	125	1.202	272	1,300	272	4	4	\$52,000		
Total		632	425										1,521		2,677	32,560				\$2,886,600		
Totals													1,521		2,677	32,560						
Group 2 Alone Totals													640		1,387							
													Pump Station		112	HP						
																	Pump Sta. Cost		\$250,000			
																	E, A, & C at 30%		\$940,980			
																	Total Cost		\$4,077,580			

Table C-6. West Parcels Group 4 Water Demands and Estimated Costs

APN	Property Owner Description	Approx. Area, Acres	Estimated Net Irrig. Area	Turf	Landscape	Field Crops	Orchards	Average July Kc	Group	Zoning	Zoning Comments	Additional Comment	Avg. Annual Water Use, ac-ft	Avg. July Loading Rate, ac-ft/day	gpm	Distance, ft	Cumulative Flow, gpm	Calculated Min. Pipe Size, in	Pipe Size, in	Estimated Pipeline Cost per Segment	
027 390 33	WOODLAND DEVELOPMENT CO LLC	134.3	20.1		20.1			0.80	1	Agricultural	Within City Boundaries	Gateway II Development	70	0.460	104	2,040	4,409	17	18	\$550,800	
027 360 23	Woodland Biomass	37.2	n/a: 300 gpm						3	Industrial	Within City Boundaries	Woodland Biomass - Power Plant	484	1.326	500	9,350	500	6	6	\$841,500	
042 580 33	BARTON TRUST	35.9	34.0	34.0				0.90	1	Agricultural	Within City Boundaries	Mountain Valley Golf Course	135	0.873	198	1,190	249	4	4	\$71,400	
027 520 15	WOODLAND CITY OF	5.4	4.9	3.9	1.0			0.88	1	City Park	Within City Boundaries	Pioneer Park	19	0.123	28	2,550	52	2	2	\$76,500	
027 520 80	WOODLAND CITY OF	4.7	4.2	3.4	0.8			0.88	1	City Park	Within City Boundaries	Pioneer Park	16	0.105	24	510	24	1	2	\$15,300	
042 580 27	Woodland Comm. College	120.9	100.0	100.0				0.90	1	Public School	Within City Boundaries	Community College Expansion	398	2.568	581	6,460	3,556	16	16	\$1,033,600	
042 580 15	City of Woodland	7.9	5.0	4.0	1.0			0.88	1	Agricultural	Within City Boundaries	Slaven Park	19	0.126	28	850	28	1	2	\$25,500	
042 580 43	Woodland springlake partners LP Attn:	9.5	6.0	5.0	1.0			0.88	1	Agricultural	Within City Boundaries	Park	23	0.151	34	1,870	34	2	2	\$56,100	
041 070 52	Optomistic Partners LLC	19.6	15.0	12.0	3.0			0.88	1	Agricultural	Within City Boundaries	Future Park	58	0.377	85	3,910	2,912	14	14	\$821,100	
041 080 14	BEEMAN MICHAEL	129.4	120.0			120.0		0.96	4	Agricultural	Outside City Boundary	Ag, then planned neighborhood	465	3.286	744	2,720	2,827	14	14	\$380,800	
041 080 02	WOODLAND CITY OF	40.0	20.0	15.0	5.0			0.88	1	City Services	Within City Boundaries	Sports Center, possible expansion	77	0.499	113	2,720	2,083	12	12	\$326,400	
041 080 01	WOODLAND CITY OF	37.9	10.0	9.0	1.0			0.89	1	City Services	Within City Boundaries	Sports Center, possible expansion	39	0.254	57	1,360	1,970	12	12	\$163,200	
041 080 08	SINGH BALWANT	17.4	15.0			15.0		1.08	4	Agricultural	Outside City Boundary	Ag, then planned neighborhood	48	0.462	105	1,190	488	6	6	\$107,100	
041 080 09	GUNNERSON BETTY B	19.6	18.0			18.0		1.08	4	Agricultural	Outside City Boundary	Ag, then planned neighborhood	58	0.555	125	510	383	5	6	\$45,900	
041 080 05	BEEMAN FAM TRUST	22.7	22.0			22.0		1.08	4	Agricultural	Outside City Boundary	Ag, then planned neighborhood	71	0.678	153	510	258	4	4	\$30,600	
041 080 12	BENSON REV TRUST	17.6	15.0			15.0		1.08	4	Agricultural	Outside City Boundary	Ag, then planned neighborhood	48	0.462	105	1,020	105	3	4	\$61,200	
039 140 16	WOODLAND CITY OF	8.3	6.5	6.0	0.5			0.89	1	City Park	Within City Boundaries	Crawford Park	26	0.165	37	3,400	1,425	10	10	\$340,000	
039 150 01	BEEMAN TIMOTHY L	61.5	60.0			60.0		1.08	2	Agricultural	Outside City Boundary	Ag	193	1.849	418	510	1,387	10	10	\$51,000	
039 150 02	FRANKE HAROLD R ESTATE	34.9	32.0			32.0		1.08	2	Agricultural	Outside City Boundary	Ag	103	0.986	223	1,020	432	5	6	\$61,200	
039 150 03	FRANKE HAROLD R ESTATE	31.0	30.0			30.0		1.08	2	Agricultural	Outside City Boundary	Ag	97	0.924	209	510	209	4	4	\$20,400	
039 030 03	JENNESS BENNING F	39.4	38.0			38.0		1.08	2	Agricultural	Outside City Boundary	Ag	122	1.171	265	2,550	537	6	6	\$153,000	
039 030 02	HILLEBY MARTHA I	40.4	39.0			39.0		1.08	2	Agricultural	Outside City Boundary	Ag	125	1.202	272	1,360	272	4	4	\$54,400	
Totals		876	615										2,695		4,409					\$5,287,000	
Totals													2,695		4,409						
Group 4 Alone Total													690		184	HP					
													Pump Station		184	HP					
																	Pump Sta. Cost		\$350,000		
																	E, A, & C at 30%		\$1,691,100		
																	Groups 1 - 4 Total Cost		\$7,328,100		

Appendix D: Water Marketing Section from Davis Integrated Water Resource Study

The following section is from a report prepared for the City of Davis. There are enough similarities between the water supply situations and considerations between Davis and Woodland that many of the findings in the Davis report are applicable to Woodland.

Water sales could provide the City supplemental revenue, which would ultimately benefit ratepayers. The purpose of this evaluation is to better define and compare the water marketing opportunities that could be available to the City. This section provides details on water rights, potential sources of water that could be marketed, and considerations for preparation and implementation of water sales.

Directly or indirectly, the City can claim rights to both groundwater and surface water sources of supply for its use. Groundwater has been the City's only source of supply until recently when the City acquired access to two water rights for Sacramento River water. Given the proper positioning and circumstances, the City could potentially sell a portion of its water to a third party. This could apply to either the fresh water supply and/or treated wastewater, depending upon conditions and precedents.

D.1. Groundwater Rights

There is no comprehensive regulatory scheme governing the extraction or use of groundwater in California. Groundwater rights have been established through court decisions and precedent. The most common rights to groundwater are correlative rights, which allow the overlying property owners to put the groundwater to beneficial use in an amount which is reasonable in light of the competing demands of other overlying users. Because of the Mojave Decision precedent, water devoted to public uses (for example, water acquired by municipalities and public utilities for distribution to the public) is now generally considered an appropriative use rather than an overlying correlative use. This would likely be the case for the City's use of groundwater.

Appropriative groundwater rights are limited to available surplus water in a groundwater basin (i.e. water in excess of correlative groundwater users' needs) and can be applied to beneficial use inside or outside of the basin. Appropriative rights have a priority determined by the timing of the commencement of use. However, where the appropriated water has been put to public use, further appropriation for public use may be allowed under an implied kind of condemnation.

After a basin becomes overdrafted, it may be possible for appropriative users to acquire prescriptive rights to groundwater if there are at least 5 years of open, notorious use of water to the detriment of the overlying correlative and/or prior appropriative groundwater users. While this is based on applying the concept of prescriptive use rights for surface water to groundwater, there is still some question as to whether prescriptive rights to groundwater can be asserted. Prescriptive rights would not apply to the City's use of groundwater because the basin is not overdrafted.

Specific numerical allocations of rights to groundwater are only established in basins that have been adjudicated. Adjudication is a means to resolve conflicts where there is insufficient groundwater to provide all the water desired by users. Because the process is long and expensive, only a few basins in California have been adjudicated, with none in Yolo County.

New public groundwater usage may potentially be limited through the CEQA process if existing users can show potential damage. When the City sought to convert a portion of their water supply to deeper wells tapping zones already used by UC Davis, UC Davis brought forth objections in the CEQA process. The parties ended up negotiating a maximum limit to the City's pumping from the deep aquifer zone to prevent impairment of UC Davis' ability to extract water from the deep aquifer zone.

The City currently utilizes groundwater for its entire potable water supply of up to approximately 15,000 af/year (based on 2002 and 2004 year usage). Were there to be an adjudication, most of this would likely be considered an appropriative right. The City theoretically could sell some of this water assuming that there was no injury to higher priority groundwater rights holders.

D.2 Surface Water Rights

Surface water rights are classified as riparian, appropriative, and pre-1914 appropriative. Riparian rights to a stream or river are the highest priority rights, but can only be put to beneficial use on lands bordering that stream or river. Appropriative rights are a first-in-time, first-in-right system of allocation based on the date of filing for diversion and beneficial use. The priority of an appropriative right can be lost if the appropriator does not apply reasonable diligence in putting the water to beneficial use. Before 1914, there was no formal permit system. The pre-1914 appropriative rights were obtained by simply posting and recording a notice of intended diversion and then constructing and using diversion facilities on a regular basis. All appropriative water rights are effectively administered by the SWRCB. Prescriptive rights to surface water can be obtained by open, notorious, continuous and adverse use for a five year prescriptive period. All surface water rights must be put to beneficial use to be perfected.

The State Water Project and Federal Central Valley Project hold rights to water retained in Lake Oroville and Lake Shasta, respectively. Their rights to the natural flow of the river are junior to all other water rights holders in the Sacramento Valley, including more recent area-of-origin water rights applications. Many northern California water districts are provided water through contracts with the U.S. Bureau of Reclamation (Reclamation) in addition to their own water rights. Limitations on the districts' water rights during dry periods have been negotiated and approved through water rights settlement contracts with the USBR. The City has access to both area-of-origin water rights and settlement contract water on the Sacramento River as detailed in the following paragraphs.

Under the watershed area of origin statute, new surface water appropriators using water within the basin of origin are granted senior water rights to the natural surface water flows over exporters. These rights are still junior to all preexisting rights for uses in the area of origin, but would be senior to the state and federal water projects diverting water out of the south Delta.

In 1994, the Yolo County Flood Control and Water Conservation District filed for an appropriative right to surface water from the Sacramento River for use by Davis, Woodland, and UC Davis under the new area of origin doctrine. The YCFCWCD assigned this to the municipal entities in 2001. Subsequently, the application was split, with the City and UC Davis becoming applicants on Application 30358A for 30,000 acre-feet ac-ft/yr and Woodland becoming an applicant on 30358B for 15,000 ac-ft/yr.

An analysis of the availability of water under this water right was performed in 2007 (WDCWA – 100, p. 5). The two applications were combined and a water right (Permit 20281) was approved in 2011 (SWRCB, 2011) and assigned to the Woodland Davis Clean Water Agency (WDCWA) Joint Powers Authority (JPA) as a representative agency for the City, Woodland, and UC Davis. The water right is for up to the total filing of 45,000 ac-ft/yr of water. Diversion under the water right is further limited to a period when "Term 91" has not been invoked. Term 91 is invoked when the State and Federal projects are effectively exporting less than they are releasing from their storage. (See Lilly, 2009). Additional limitations on diversion could be applied because of Bay-Delta water quality requirements. Because of these limitations, the water right would effectively be limited to approximately the months of October through May in most years, with some water available in June and September about half of the time (West Yost, 2012).

The WDCWA also purchased a water right from Conaway Preservation Group (CPG) owners based on appropriative water rights licenses 904 and 5487. The agreement dated December 2010 (WDCWA, 2010) is for up to 10,000 ac-ft/yr, with 7,500 ac-ft/yr during summer months (July through September). CPG's effective water right is subject to a Reclamation Settlement contract, which reduces the available overall water right by 25 percent during Lake Shasta critical dry years. There may also be some rescheduling charges imposed by Reclamation to deliver more than 500 ac-ft in August.

The City’s share under the water purchase agreement is 46.1 percent. The JPA-held water rights (and the City’s share) will be senior to the remaining CPG -appropriative water rights, but only for municipal and industrial uses in the JPA service area. Other uses will have equal priorities with CPG’s remaining appropriative water rights. The purchase takes effect in 2016. The total principal cost of this water was \$18.6 million (\$4,000 per ac-ft for normal year water) plus \$17.9 million in interest at 6% over the 24 year payment period.

The City’s portions of the area of origin and purchased water rights are summarized in Table 4-18.

Table C-1. Davis Recorded and Implicit Water Rights				
Source	Potential capacity (ac-ft/yr)	Usage precedent (ac-ft/yr)	Recorded water right (ac-ft/yr)	Limitations
Groundwater	22,200	15,100	n/a	Deep wells limit 4,500 gpm under UC Davis agreement, intermediate wells limited by water quality
Surface water - CPG	4,610	CPG usage	4,610	Could be reduced by 25% in critically dry years
Surface water - Area of origin	20,745	n/a	20,745	Held by WDCWA, shared with UC Davis, subject to Term 91 diversion limitations
Treated wastewater	3,450	0	n/a	

Notes:

1. Treated wastewater capacity for May - September irrigation season.
2. Groundwater capacity assumes 2.0 peaking factor for maximum day capacity to annual capacity.

D.3 Treated Wastewater

The City’s treated wastewater will become a more desirable source of irrigation water as the City lowers the salinity of its fresh water supply over time. The City is also moving to tertiary treatment, which would provide water suitable for unrestricted irrigation reuse. This would make it easier to market treated effluent directly or indirectly. There are no explicit conditions on requirements for treated wastewater return flow listed in the City’s area-of-origin water right decision (SWRCB, 2011). Should treated effluent be reused or sold to local irrigators, the reuse would likely offset agricultural groundwater pumping, thereby increasing groundwater in storage.

D.4 Water Transfers – Overview

The ability to transfer water rights on a short-term or long-term basis adds flexibility to the State’s water supply (Hanak and Stryjewski, 2012). The water market in California accounts for an average of approximately 1.4 million ac-ft of water exchanging hands annually, or roughly 5 percent of all water used in the state. Market growth has slowed since the early 2000s, reflecting infrastructure and administrative constraints.

Permanent transfers involve the sale of water rights on a permanent basis from one entity to another. Water rights sales by Natomas Central Mutual Water Company and the sale of water from CPG to the WDCWA are recent local examples of permanent water transfers. Temporary transfers are often for one or several years’



term. Past sales to the State Water Bank and sales between Federal and State water project contractors are good examples of short term water transfers. Dry year options are arrangements where purchasers will pay a water rights holder for the right to buy water at a given price at a certain frequency, usually in dry years. Dry year options tend to be better tolerated by third parties in the area of the water seller because they are viewed as having fewer adverse long-term economic impacts.

Annual averages for internal and external water sales in the Sacramento Valley for the years 2003 – 2011 are listed in Table 4-19 (Hanak and Stryjewsky, 2012). Approximately 80% of the statewide transfers are between buyers and sellers within projects rather between entities outside of their respective projects.

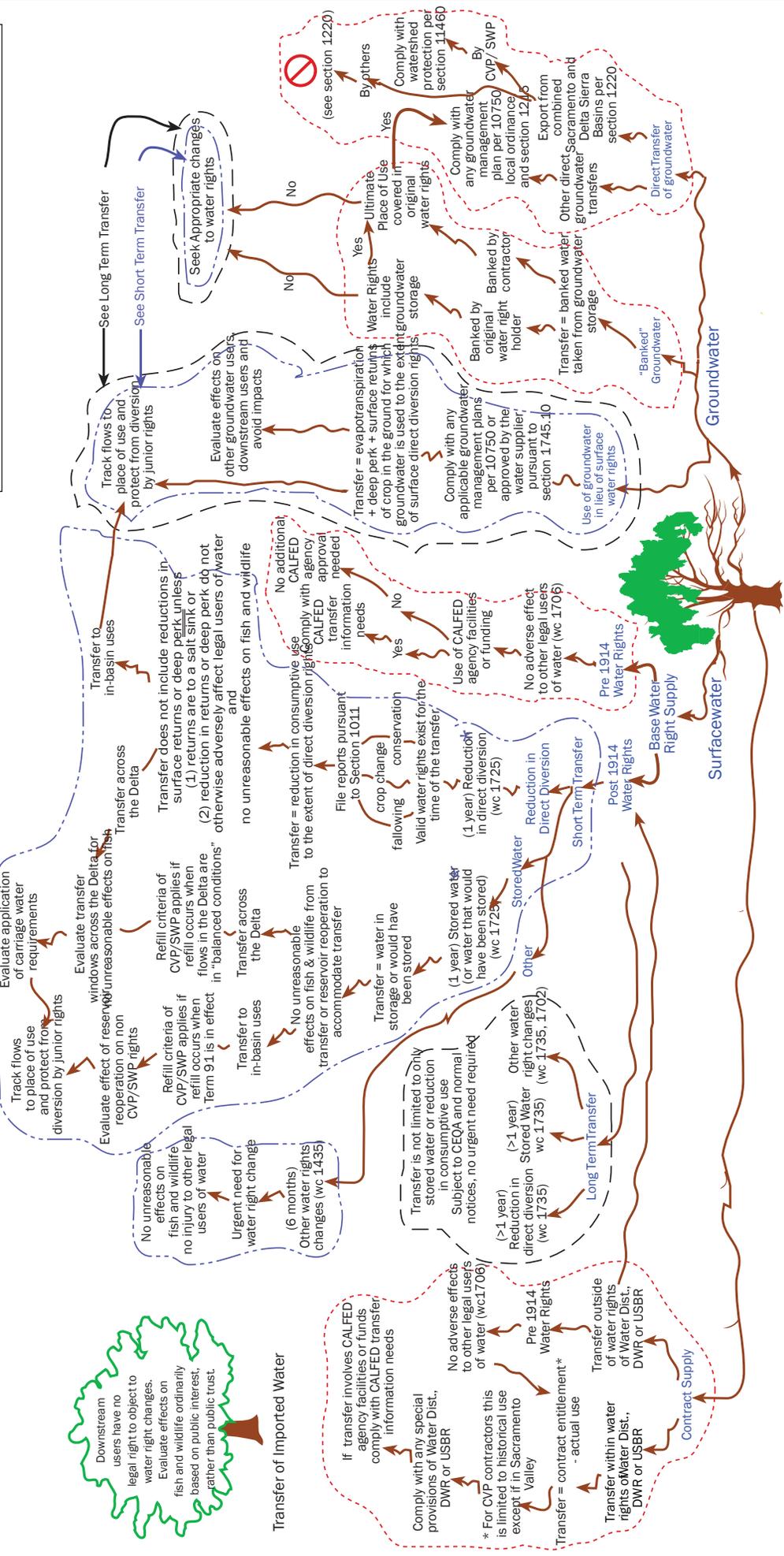
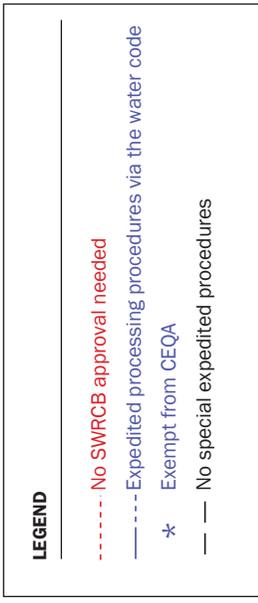
Type of Sale	Average Annual Volume (ac-ft/yr, rounded)
Internal non-environmental sales	80,000
External non-environmental sales (exports)	82,000
Environmental sales	74,000
Total Sales	238,000

D.5 Water Eligible for Transfer

Water eligible for transfer typically must be water that would have otherwise been beneficially consumed or left in storage (also known as “wet water” in contrast to “paper water”). The four sources of “wet water” eligible for transfer are:

- Excess water stored in surface reservoirs
- Other excess amounts of surface water that the seller has the right to use, but does not need during the term of the transfer
- Conserved water the seller saves by reducing use
- Groundwater

The right to sell conserved water is reinforced in Water Code Sections 1011 and 1725. Further clarification was provided in State Water Resources Board (SWRCB) Order 99-012. The amount of conserved irrigation water available for sale has generally been considered the net water use conserved. In the case of irrigation water, conserved water has been construed to equal evapotranspiration savings rather than the total diversion right, because the total water right may include water that actually gets partially returned to the system. A water transfer decision tree developed by the SWRCB is shown in Figure 4-21.



Source: State Water Resources Control Board, Division of Water Rights, July 1999

Water Code sections 1010 and 1011 allow a water right holder who saves water through certain conservation measures to retain rights to the unused surface water (SWRCB, 1999). The protections provided are subject to the water right holder filing reports required by the SWRCB on the amount of surface water saved through the conservation effort, use of recycled water, or conjunctively used groundwater. Therefore, filings and documentation are critical to preserving a right to conserved water.

Conserved water was the basis for much of the water transferred during the state Drought Water Bank operation years of 1990, 1991, 1994, and 2009, with the conserved water generated by land fallowing or crop substitution. Groundwater substitution was the basis for some of the water sold to the Drought Water Bank, where surface water rights holders pumped groundwater for irrigation instead of utilizing surface water. Groundwater substitution has been limited by guidelines that deduct for the loss of surface water than can result from pumping, especially for groundwater pumping near surface waters.

D.6 Yolo County Water Transfer Ordinance

A California court held that groundwater regulation is within a county's police powers and is not otherwise preempted by general State law. As a result of this case, many counties have adopted groundwater transfer ordinances. In particular, counties are concerned with potential mining of groundwater resources for use outside the county. The extent to which counties can regulate groundwater is still an open question.

Yolo County passed an ordinance in 1996 addressing groundwater effects due to water transfers (Yolo County Code section 10-7). It addresses both the extraction of groundwater directly and the extraction of groundwater to replace a surface water supply to be transferred outside the county. The ordinance requires a permit application, demonstration that long term groundwater conditions will not be adversely affected, and approval by the Board of Supervisors.

D.7 Rights to Transfer Treated Wastewater

Many cities have historically discharged treated wastewater into surface water bodies, thereby providing a source of water for downstream water users. However, other cities use all or a portion of their treated wastewater for agricultural, landscape, or turf irrigation. Wastewater recycling is being strongly encouraged by the State as a source of additional water through policies such as the recent Statewide Recycling Policy (2009). Tertiary treatment in particular provides water for unrestricted irrigation reuse. Water code section 1485 allows those who discharge treated wastewater to the San Joaquin River to file an appropriative water right application. The City of Stockton received a revised permit pursuant to that legislation in year 2000. The City of Modesto has also performed preliminary studies, including alternatives for water marketing, for use of effluent from its new tertiary wastewater treatment plant currently under construction.

Assembly Bill (AB) 134 was passed by the Legislature and signed by the Governor in September 2011. It enables Sacramento Regional County Sanitation District (SRCSD) to file an application with the SWRCB to obtain a water right permit for an equivalent amount of high-quality recycled water that SRCSD treats and discharges to the Sacramento River, subject to the protection of the rights of any legal user of the water.

The rights of cities to sell treated wastewater from a groundwater source has been less controversial than for cities which intend to sell treated wastewater derived from a surface water source. In the case of surface water supplies, downstream users may claim injury because they had depended upon return flows. This would likely not apply to state and federal water export projects. Even though there has been legislation reinforcing the rights of municipalities to their treated wastewater for use or transfer, transfers would still be subject to the "no injury" rule. Putting treated wastewater directly to beneficial use in Yolo County would help establish rights to the tertiary treated effluent.

D.8 Potential Water Purchasers

This section describes several types of potential water purchasers of the City's water resources.

Local Agricultural Water Users. The City previously evaluated providing treated secondary effluent to Conaway Ranch for irrigation reuse. The conclusions were that tertiary treatment would likely be required anyway to provide the flexibility for reuse and that there were marketability issues for Conaway leaseholders if their crops were to be irrigated with recycled water. Therefore there was no advantage to sending secondary treated water to Conaway versus constructing tertiary treatment facilities for effluent discharge to Willow Slough Bypass. However, the situation has changed now that CPG has sold water to the WDCWA and needs replacement water. CPG is currently planning to replace the sold water with groundwater. CPG also has to prove that their groundwater pumping is not adversely affecting surface water flows. In order to improve Conaway's overall hydraulic balance and possibly reduce groundwater costs, CPG could possibly be interested in purchasing some tertiary treated effluent in place of pumping groundwater, However, this would probably only be feasible if a portion of the Conaway system could be isolated to use recycled water without affecting crop marketability on the rest of the ranch.

There is other farmland in the area surrounding the Davis WPCP, most of which is irrigated using groundwater. If recycled water were less costly than groundwater pumping (total costs estimated at \$70/ac-ft), some of these lands could be enticed to use recycled water. This would also have the benefit of increasing local groundwater in storage.

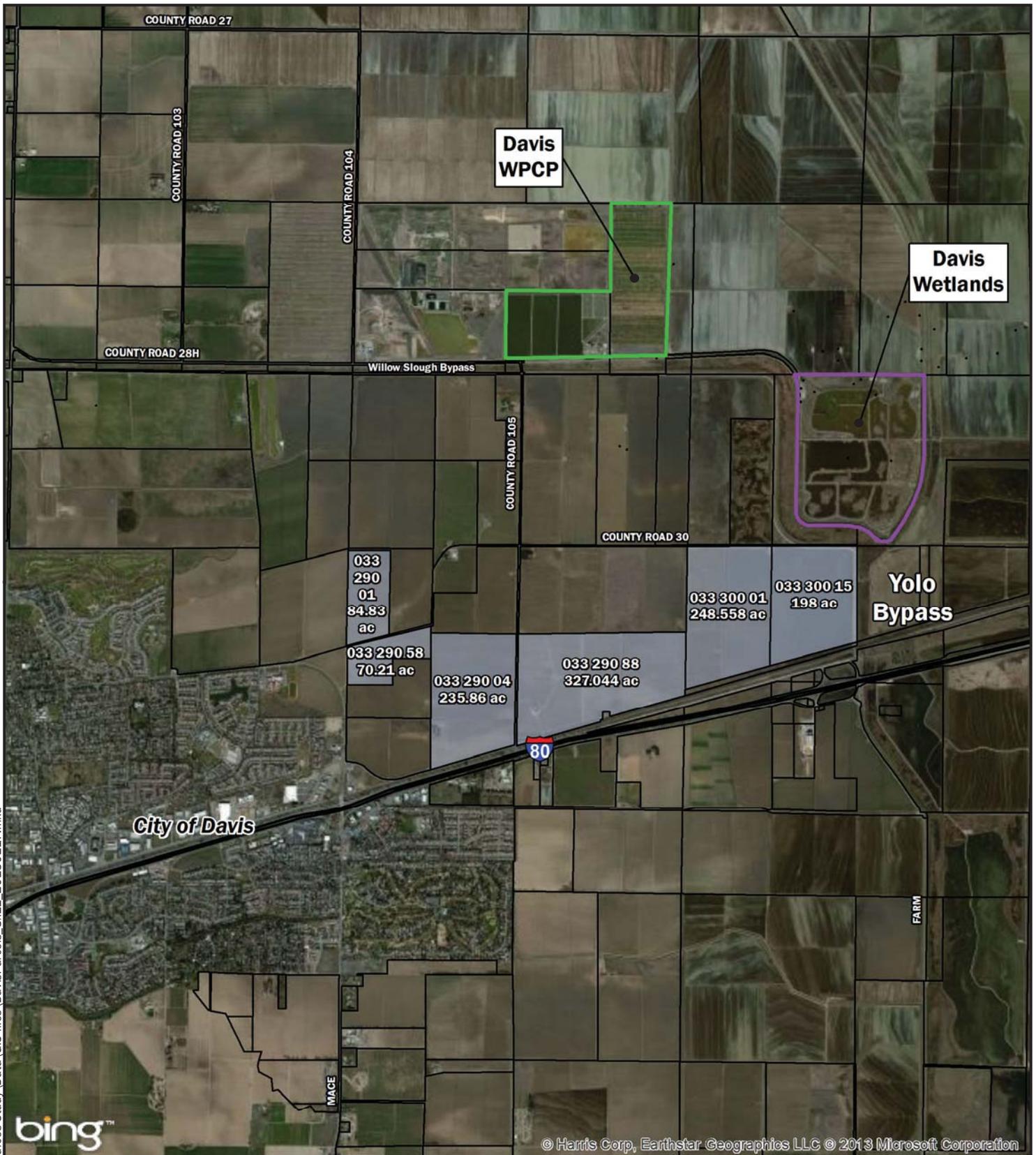
Swanston Ranch is located in the Yolo Bypass downstream of the City's current discharge point 001 into Willow Slough Bypass. Swanston Ranch currently dedicates approximately 700 acres of land to farm crops and 2,000 acres to wildlife habitat. Swanston Ranch could be interested in purchasing some of the City's treated effluent for both uses. Swanston could resell some of its own water rights during dry years if it had a reliable source of water from the City.

Local Environmental Water Users. The Yolo Bypass Wildlife Area may have a need for additional water during some years. Water Code section 1707 provides a means to facilitate water transfers for instream environmental uses.

Use on City-Owned Agricultural Land. The City owns over 1100 acres of farmland land southeast of the WPCP as shown in Figure 4-22. Roughly 3,000 ac-ft of groundwater per year is needed to irrigate these parcels. The City has considered providing recycled water to this parcel. The pipeline cost could be substantial, but it would offset approximately \$150,000 per year in pumping related costs. Alternatively, it may be possible to move the treated effluent part way to the City-owned land through Willow Slough Bypass and then divert the water closer to the point of use. More importantly, it would establish a precedent for irrigation reuse of that water and would provide in-lieu recharge of groundwater, potentially helping to enable dry year transfers of a like amount of recycled water.

Other Sacramento Valley Agricultural Users. There are several agricultural water districts served by Tehama Colusa Canal on the west side of the Sacramento Valley that have been impacted by Reclamation's cutbacks in drought years. They could be interested in supplemental water in drought years, although they would tend to pay a much lower price for water than municipal suppliers or exporters.

In-Basin Municipal Users. Based on legislation passed in 2001 (SB 221 and SB 610), agencies must assess and verify the adequacy of water supplies prior to approving large new development projects. The City of Folsom has been entering into permanent water rights purchase agreements to enable development, reportedly agreeing to pay \$4,000 per af for water from Natomas Central Mutual Water Company. Other Sacramento Valley municipalities or municipalities served by the North Bay Aqueduct could be interested in purchasing water on a short term basis, especially during drought years.



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Legend

- Agricultural Parcels Owned by the City of Davis
- Davis Wetlands
- Surrounding Parcel Boundaries
- Davis WPCP



DATE 1/17/13	PROJECT 143072	SITE <h2 style="text-align: center; margin: 0;">Agricultural Parcels Owned by the City of Davis</h2>	Figure D-2
TITLE <h2 style="text-align: center; margin: 0;">Integrated Water Resources Study</h2>			

Out-Of-Basin Users (Exporters). Out-of-basin users are typically able to pay higher prices for water when needed. Some examples are discussed below.

The Metropolitan Water District of Southern California (MWDSC) is a large player in water transfers. They publish water costs annually. In 2003, MWDSC exercised its rights under option contracts and other arrangements with northern California water districts to purchase 147,200 ac-ft of water at a net price of \$100 per acre-foot.

In 2008, Conaway Conservancy Group agreed to sell 12,195 acre-feet of water to the San Luis & Delta-Mendota Water Authority in the San Joaquin Valley, and San Benito and Santa Clara counties for a \$2.1 million sale price (approx. \$170/ac-ft) from July to September (Lamb, 2008).

The 2009 Drought Water Bank transferred 76,600 ac-ft across the Delta. At an offering price of \$275/ac-ft to potential sellers, the participation rate was well below the rate hoped for by DWR, indicating that a true market price may have been higher than \$275/ac-ft.

San Francisco Public Utilities Commission offered to pay \$700/ac-ft for water to the Modesto Irrigation District, but because of concerns over contract details and by other local agencies, Modesto Irrigation District declined. The relatively high offering price may have been due to other business considerations and not reflective of short term open market conditions.

MWDSC's Tier 2 rate is set at their estimated cost of developing additional supply to encourage efficient use of local resources. The current Tier 2 rate is \$290/ac-ft at the Delta.

Marketing of City Water Rights

Because the City intends to utilize its share of the water from the WDCWA most future years, water marketing could be a means for the City to realize revenue under these possible scenarios:

1. Selling its portion of the CPG water right held by the WDCWA prior to the City obtaining the water for its own use.
2. Selling a portion of its surface water rights and substituting groundwater during future dry years.
3. Selling treated wastewater to local agricultural users.
4. Selling treated wastewater directly or indirectly to users downstream of a Willow Slough Bypass or Yolo Bypass discharge point.

Selling Area-of-Origin Water Rights. The area-of-origin water rights will not be available during most summer months, especially during a drought. Therefore, the area of origin water rights will not be as valuable as more senior water rights and will be more difficult to market. It may be possible to sell some area-of-origin water to exporters during dry years.

Selling Water Rights from CPG Purchase. Under terms of the Water Agreement (WDWCA, 2010), transfer of JPA water rights prior to year 2040 is limited to the number of days of Term 91 or other diversion prohibition multiplied by 159 ac-ft/day minus the amount of water actually diverted under the CPG agreement. Therefore, water sales could only be made during years with Term 91 restrictions and could be further limited by this clause in the Water Purchase Agreement.

Taking into considerations the above limitations on transferring CPG purchase origin water, selling this water should be feasible during dry years. This would apply to:

- Water the City has purchased, but not put to use.
- Conserved water after the City has put the CPG water rights to beneficial use
- Treated wastewater

Establishing a Precedent through Local Transfers and Use. In order to better preserve the rights it has and to establish the rights to transfer water, the City should endeavor to put as much water to local beneficial

use as possible. Supplying recycled water to uses that could easily be switched back to groundwater supply would be one of the best ways to accomplish this. The potential users were described earlier, and would include:

- Local agricultural irrigators near Willow Slough Bypass
- Swanston Ranch
- Yolo Wildlife Area
- City-owned farmland south of Willow Slough Bypass

Water Conservation Considerations. The City should document and formally notify the SWRCB regarding the water savings it has already accomplished. Conservation efforts should be consistent with the urban water management plan referenced in the area-of-origin water rights permit 30358 Standard Term 29A. Updates to the City's 2010 Urban Water Management Plan and Groundwater Management Plan (GWMP) should document planned water conservation measures and state that one of the intentions is to provide transferrable water. Real water savings should then be documented as conservation measures are implemented.

Yolo County Water Transfer Ordinance Considerations. A permit application and approval by the Yolo County Board of Supervisors would be required for transfers utilizing groundwater substitution. This should probably be arranged at a planning level so that approval would be in place.

D.9 Conclusions and Recommendations

The City's portion of its CPG purchase rights could be worth as much as \$1,000,000 per year on the open market in drought years. Other sources of potentially marketable water could also bring revenue to the City. Maintaining the flexibility to perform water transfers could provide funds to help partially offset costs of new surface water rights and tertiary treatment.

The most important recommendation is for the City to plan ahead and set itself up for the ability to sell water, whether it chooses to or not in the future. Filings and other actions should be undertaken to document water savings from prior conservation efforts and to provide notice that the City may be considering transferring the conserved water in the future. Possible detailed action items for consideration are as follows:

- Implement conservation in coordination with water rights and water marketing considerations
- Document all conserved water with SWRCB
- Earmark conserved water and recycled water as potentially transferrable in future updates to the City's 2010 Urban Water Management Plan and GWMP.
- Work with Yolo County to set up conditions for approval of future water transfers
- Pursue local agricultural use of recycled water and document any usage as offsetting groundwater pumping
- Contact potential buyers for interim water sales
- Contact potential buyers for future dry year option contracts
- Implement ASR to provide a greater amount of high quality water during dry years
- Implement local urban water reuse projects if economical
- Document all other actions that generate transferrable water

The City should also establish precedence to beneficial use of water through one or more of the following:

- Use of recycled water to irrigate City-owned farmland
- Selling treated effluent to Swanston Ranch
- Selling treated effluent to other agricultural lands close to the existing point of discharge

Water marketing is a complex subject with more details than can be addressed within the scope of this IWRS. Recommendations for next steps are provided in Section 6.

Water Shortage Contingency Plan

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City of Woodland Water Shortage Contingency Plan

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LIST OF ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
AF	Acre-Feet
ASR	Aquifer Storage and Recovery
AWSDA	Annual Water Supply and Demand Assessment
City	City of Woodland
CWC	California Water Code
DWR	Department of Water Resources
ERP	Emergency Response Plan
MGD	Million Gallons Per Day
MOU	Memorandum of Understanding
MWELO	Model Water Efficient Landscape Ordinance
PIO	Public Information Officer
SB	Senate Bill
UWMP	Urban Water Management Plan
WDCWA	Woodland Davis Clean Water Agency
WMC	Woodland Municipal Code
WPCF	Water Pollution Control Facility
WSCP	Water Shortage Contingency Plan
WSET	Water Shortage Evaluation Team

Water Shortage Contingency Plan

A water shortage may occur due to a number of reasons, such as population growth, climate change, drought, and catastrophic events. Drought, regulatory action constraints, and natural and manmade disasters may occur at any time. A water shortage means that the water supply available is insufficient to meet the normally expected customer water use at a given point in time.

This plan presents the Water Shortage Contingency Plan (WSCP) for the City of Woodland (City). The WSCP describes the City's strategic plan in preparation for and responses to water shortages with a goal to proactively prevent catastrophic service disruptions. It includes water shortage stages and associated actions that will be implemented in the event of a water supply shortage. As part of the WSCP, the City's legal authorities, communication protocols, compliance and enforcement, and monitoring and reporting are included. The Woodland Municipal Code (WMC) Chapter 13.32.040 Water Shortage Stages and Restrictions includes provisions that support the City's WSCP and has been updated over time.

In 2018, the California State Legislature (Legislature) enacted two policy bills, (Senate Bill (SB) 606 (Hertzberg) and Assembly Bill (AB) 1668 (Friedman)) (2018 Water Conservation Legislation), to establish a new foundation for drought planning to adapt to climate change and the resulting longer and more intense droughts in California. The 2018 Water Conservation Legislation set new requirements for water shortage contingency planning.

The City's WSCP has been updated so that it is consistent with the 2018 Water Conservation Legislation requirements. The City plans to modify WMC Chapter 13.32.040 to support these updates. The City intends for this WSCP to be dynamic, so that it may assess response action effectiveness and adapt to emergencies and catastrophic events. Refinement procedures and adoption requirements are provided in this plan to allow the City to modify this WSCP outside of the Urban Water Management Plan (UWMP) process.

1.0 WATER SUPPLY RELIABILITY ANALYSIS

Chapters 6 and 7 of the City's 2020 UWMP present the City's water supply sources and reliability, respectively. Findings show that the City's five consecutive dry year supplies, whether occurring now or 20 years in the future, are adequate to meet projected five consecutive dry year demands because if there is any disruption in surface water supply, the City will increase groundwater pumping to compensate. While potable supplies will remain reliable, water quality consistency will suffer as water from the City's native groundwater wells is less palatable than the surface water.

Statewide water supply conditions, changes in groundwater levels, subsidence, and actions by Woodland Davis Clean Water Agency (WDCWA), may impact the City's available water supply. For the City, a water shortage condition occurs when the supply of potable water available cannot meet ordinary water demands for human consumption, sanitation, fire protection, and other beneficial uses. The City may be able to foresee its water shortage condition in some cases; however, in other cases, the water shortage may be caused by an unforeseen sudden or emergency event. In general, the City's water supply conditions may be affected by the following issues:

- WDCWA supply availability and/or production issues
- City well production and/or water quality issues



Water Shortage Contingency Plan

The City may experience unforeseen water shortage when catastrophic interruption of water supplies occurs due to regional power outage, an earthquake, or other potential emergency events.

In future years, the City will conduct an annual water supply and demand assessment in accordance with Section 2. The analysis associated with this WSCP was developed in the context of the City's water supply sources and reliability.

2.0 ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT PROCEDURES

Beginning July 1, 2022, California Water Code (CWC) §10632.1 requires water suppliers to submit an Annual Water Supply and Demand Assessment (AWSDA). Water suppliers will also be required to submit an Annual Water Shortage Assessment Report beginning July 1, 2022. This WSCP provides the procedures for the City to conduct its Annual Water Supply and Demand Assessment. The findings from that assessment will provide information for the City's Annual Water Shortage Assessment Report.

The procedures provided in this section are intended to assist the City in planning for potential, foreseeable shortage in water supplies. These procedures provide the steps the City needs to take that may lead to declaring a water shortage emergency and associated water shortage level (see Section 3) and implementation of water shortage response actions (see Section 4).

2.1 Decision-making Process

The decision-making process described below will be used by the City to determine its water supply reliability in a consistent manner annually. The City may adjust this process for improved decision-making during implementation.

The Water Shortage Evaluation Team (WSET) is responsible for the preparation of the City's AWSDA and Annual Water Shortage Assessment Report, and submittal of the reports to the Department of Water Resources (DWR) by July 1 of each year. The WSET will gather key data inputs described in Section 2.2 and conduct the assessment in accordance with Section 2.3. In May, the WSET will finalize the assessment based on expected availability of purchased water from WDCWA, amount of stored surface water available from the City's Aquifer Storage and Recovery (ASR) wells, and expected customer demand. If the Annual Assessment finds that available water supply will be sufficient to meet expected demands for the current year and one subsequent dry year, the City's Annual Water Shortage Assessment Report will be finalized using the AWSDA. The final approved documents will be submitted to DWR by July 1 each year.

The City will follow the timeline of activities as shown on Table 1 for conducting the assessment. Due to variations in climate and hydrologic conditions, the start and end dates shown in the table are approximate and may be adjusted as needed. The intent of the schedule is to allow shortage response actions to effectively address anticipated water shortage conditions in timely manner, and to comply with the State's reporting requirements.



Water Shortage Contingency Plan

Schedule	Activities	Responsible Party
Early January	Convene Team	Associate Engineer
Early January	Plan for water supply sources for current year and one subsequent dry year. Describe sources and quantities considering factors affecting supply as described in Section 2.2.	WSET
Mid- to Late January	Plan for water demands for current year and one subsequent dry year. Describe demand types and quantities considering factors affecting supply as described in Section 2.2.	WSET
February	Using the methodology described in Section 2.3, calculate the City's water supply reliability for the current year and one subsequent dry year.	WSET
March	Finalize assessment based on expected water supply and demand.	WSET
Late April	Draft Annual Water Shortage Assessment Report for DWR submittal.	WSET
May	Review, finalize and approve Annual Assessment and Annual Water Shortage Assessment Report.	Principal Utilities Engineer
Before July 1	Submit Annual Assessment and finalized Annual Water Shortage Assessment Report to DWR.	Associate Engineer

In the event that the AWSDA finds that available supply will not meet expected demands, the WSET will present the finalized assessment to the City Council, along with recommendations on water shortage condition determination and actions. Recommended actions may include declaration of a water shortage emergency, declaration of a water shortage level, and water shortage actions. The WSET will coordinate interdepartmentally, with WDCWA, and with Yolo County for the possible proclamation of a local emergency. Based on the findings of the assessment, the City Council is responsible for conducting a duly noticed public meeting, determining if a water shortage condition exists and, if needed, declaring a water shortage emergency and water shortage level and authorizing water shortage actions. The WSET will prepare the City's Annual Water Shortage Assessment Report using the finalized AWSDA and incorporate City Council determinations and approved actions.

The schedule of decision-making activities is provided in Table 2. The start and end dates and the activities shown in this table are approximate and may be adjusted as needed.



Water Shortage Contingency Plan

Schedule	Activities	Responsible Party
Early May	Based on finalized determinations of AWSDA regarding water shortage condition and recommended actions, prepare recommendations on water shortage condition determination and actions.	WSET
Early-May	Prepare ordinances or resolutions approving determinations and actions.	WSET
Early May	Coordinate interdepartmentally, with WDCWA, and with County OES for the possible proclamation of a local emergency	WSET
Early May	Release public meeting notice	WSET/ City Clerk
Mid- to Late May	Present finalized determinations and recommendations, along with ordinances or resolutions approving determinations and actions.	WSET
Mid- to Late May	Conduct public meeting if water shortage emergency condition exists. Make determination of degree of emergency, and authorize water shortage response actions for implementation. Receive presentation of finalized determinations and recommendations. Act on ordinances or resolutions.	City Council
Mid- May to Early June	If a water shortage emergency condition is declared, implement the WSCP and the water shortage response actions as approved by City Council.	WSET
June	Finalize Annual Water Shortage Assessment Report. Incorporate City Council determinations and actions.	WSET
Before July 1	Submit finalized AWSDA assessment and Annual Water Shortage Assessment Report to DWR.	Associate Engineer

2.2 Key Data Inputs

The AWSDA requires the evaluation of supply and demands for the current year and one dry year that is assumed to follow the current year. The following key data inputs will be used to evaluate the City's water supply reliability.

Planned water supplies will be used as input to the AWSDA for the current year and an assumed subsequent single dry year. In planning for water supplies, the following factors are considered as applicable:

1. Hydrological conditions
2. Regulatory conditions
3. Contractual constraints
4. Surface water and groundwater quality conditions
5. Well production limitations
6. Infrastructure capacity constraints or changes.
7. Capital improvement projects implementation



Water Shortage Contingency Plan

Planned water supply sources and quantities will be described and be reasonably consistent with the supply projections in the City's last updated UWMP Chapter 6 (Water Supply Characterization). Should the supply sources and projections deviate significantly from projections, an explanation for the difference will be provided.

Planned unconstrained water demands will be used as input to the AWSDA for the current year and an assumed subsequent single dry year. Unconstrained water demands are customer demands where no water conservation measures are in effect. In planning for water demands, the following factors are considered as applicable:

1. Weather conditions
2. Water year type
3. Population changes (for example, due to development projects)
4. Anticipated new demands (for example, changes to land use)
5. Pending policy changes that may impact demands
6. Infrastructure operations

Planned water demands types and quantities will be described and be reasonably consistent with the demand projections in the City's last updated UWMP Chapter 4 (Water Demand Characterization). Should the demand projections deviate significantly from projections, an explanation for the difference will be provided.

2.3 Assessment Methodology

In preparing the AWSDA, the City will follow the following assessment methodology and evaluation criteria will be used to evaluate the agency's water supply reliability for the current year and following one dry year.

The City uses a spreadsheet to plan for current year and future year demands. Planned supply and demand inputs described in Section 2.2 will be entered in the spreadsheet in monthly increments.

Supply and demand will be compared to determine the reliability of the City's water supply in the current year and the following one dry year. The City's water supply for the current year and the following dry year will be determined as reliable if water supply is sufficient to meet the planned water demands. If water supply is insufficient to meet planned water demands in the current year and/or the following dry year, the extent of the water shortage condition will be determined, and the City will prepare response actions in accordance with this WSCP.

The AWSDA findings will be presented to the City Council, along with recommendations for action for City Council consideration.



Water Shortage Contingency Plan

3.0 SIX STANDARD WATER SHORTAGE LEVELS

To provide a consistent regional and statewide approach to conveying the relative severity of water supply shortage conditions, the 2018 Water Conservation Legislation mandates that water suppliers plan for six standard water shortage levels that correspond to progressive ranges of up to 10, 20, 30, 40, 50 percent, and greater than 50 percent shortages from the normal reliability condition. Each shortage condition should correspond to additional actions water suppliers would implement to meet the severity of the impending shortages.

In Table 3 (DWR UWMP Table 8-1), the City's water shortage levels (also called "stages") and corresponding water shortage level response actions are summarized. The City's water shortage levels apply to both foreseeable and unforeseeable water supply shortage conditions. The City's 2015 UWMP included five levels that addressed up to 50 percent gap between supply and demand. The City's five levels are reorganized to align with the State's standard levels and incorporates a sixth level to address a 50 percent or greater gap between supply and demand. Water shortage is the gap between available supply and planned demands.

As described in Section 2, the City will conduct an AWSDA to determine its water supply condition for the current year and the following one dry year. The preparation of AWSDA helps the City ascertain the need to declare a water shortage emergency and water shortage level. In other cases, the City may need to declare a water shortage emergency due to unforeseen water supply interruptions. When the City anticipates or identifies that water supplies may not be adequate to meet the normal water supply needs of its customers, the City Council may determine that a water shortage exists and consider a resolution to declare a water shortage emergency and associated level. The shortage level provides direction on shortage response actions.



Water Shortage Contingency Plan

Table 3. Water Shortage Contingency Plan Levels (DWR Table 8-1)

Shortage Level	Percent Shortage Range	Shortage Response Actions (Narrative description)
1	Up to 10%	<ul style="list-style-type: none"> - City to encourage water customers and users to implement best water management and conservation practices, including avoiding water waste as defined in WMC Section 13.32.030 and following the City's landscape requirements (WMC Section 17.112) and State Model Water Efficient Landscape Ordinance (23 California Code of Regulations Section 490), except when they are replaced by more restrictive conditions imposed by the water stages in WMC Section 13.32.030. - All City water customers shall reduce water use by 10% (Stage 1) from their normal water demand. - Hosing off sidewalks, driveways, and other hardscapes is prohibited. - Water hoses shall be equipped with a control nozzle capable of completely shutting off the flow of water except when positive pressure is applied. - Water shall be served upon request at restaurants.
2	Up to 20%	<ul style="list-style-type: none"> - Shortage Response Actions in Level 1 as shown in the row above - All City water customers shall reduce water use by 20% (Stage 2) from their normal water demand. - Outdoor watering is restricted to three days per week.
3	Up to 30%	<ul style="list-style-type: none"> - Shortage Response Actions in Level 2 as shown in row above - All City water customers shall reduce water use by 30% (Stage 3) from their normal water demand. - Outdoor watering is restricted to two days per week. - All nonresidential users are to reduce irrigation by 40% for existing landscapes. - The use of running water from a hose, pipe, or faucet for the purpose of cleaning buildings and outdoor hardscape surfaces is prohibited. - Boats and vehicles shall be washed only at commercial washing facilities equipped with water recycling equipment or by use of a bucket and a hose equipped with a self-closing valve that requires operating positive pressure to activate the flow of water. - New or expanded landscaping is limited to drought tolerant trees, shrubs, and ground cover. No new turf grass shall be planted, hydroseeded, or laid.
4	Up to 40%	<ul style="list-style-type: none"> - Shortage Response Actions in Level 3 as shown in row above - All City water customers shall reduce water use by 40% (Stage 4) from their normal water demand. - Irrigation of any landscaping except trees or drought tolerant plantings is prohibited. - Boats, vehicles, and equipment shall be washed at commercial establishments that recycle water. - No new water service connections or commitments for new water service shall be put in place until the City has returned to at least stage 2, water warning restrictions. - Filling pools and spas is prohibited.
5	Up to 50%	<ul style="list-style-type: none"> - Shortage Response Actions in Level 4 as shown in row above - All City water customers shall reduce water use by 50% (Stage 5) from their normal water demand.
6	>50%	<ul style="list-style-type: none"> - Shortage Response Actions in Level 5 as shown in row above - All City water customers shall reduce water use by 50% (Stage 6) from their normal water demand.

The current WMC Chapter 13.32.040 addresses demand reduction actions required by the City per level. Concurrent with the preparation of this UWMP, the City is in the process of updating WMC Chapter 13.32.040 to support this updated WSCP.



4.0 SHORTAGE RESPONSE ACTIONS AND EFFECTIVENESS

CWC §10632 (a)(4) requires shortage response actions that align with the defined shortage levels. The City's shortage response actions consist of a combination of demand reduction, supply augmentation, and operational changes. The City's suites of response actions are dependent on the event that precipitates a water shortage level, the time of the year the event occurs, the water supply sources available, and the condition of its water system infrastructure.

The City plans to use a balanced approach, combining supply augmentation, demand reduction, and operational changes to respond to the event and the resulting water shortage level. The City will adapt its implementation of response actions to close the gap between water supplies and water demand and meet the water use goals associated with the declared water shortage level.

This continuous monitoring, as described in Section 9, allows the City to assess water system demands and compare it with its water demand reduction goals. The City may then adjust its shortage response actions, allowing it to equalize demands with available water supplies. For example, the City may intensify its public outreach or more vigorously enforce compliance to water use prohibitions if needed water demand reduction goals are not met for any specific level.

The shortage response actions discussed below may be considered as tools that allow the City to respond to water shortage conditions. Because the City may continuously monitor and adjust its response actions to reasonably equate demands with available supply, the extent to which the gap between water supplies and water demand will be reduced by implementation of each action is difficult to quantify and is provided as an estimate. Certain response actions, such as public outreach and enforcement, support the effectiveness of other response actions and do not have a quantifiable effect on their own.

4.1 Demand Reduction and Mandatory Restrictions

During water shortage conditions, the City plans to close the gap between water supply and water demand by implementing demand reduction action categories shown in Table 4 (DWR UWMP Table 8-2). The shortage level for which each demand reduction action will commence implementation is also provided, along with the estimate of extent that the action will reduce the shortage gap. The table also indicates if the City plans to use compliance actions such as penalties, charges, or other enforcement actions for each demand reduction action.



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Table 4. Water Shortage Contingency Plan Demand Reduction Actions (DWR Table 8-2)

Shortage Level	Demand Reduction Actions <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.</i>	How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i>	Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement? <i>For Retail Suppliers Only Drop Down List</i>
<i>Add additional rows as needed</i>				
0	Expand Public Information Campaign	Reduce water use up to 20%	Encourage water users to reduce water waste	No
0	Offer Water Use Surveys	Reduce water use up to 0.5%	Increase awareness of our AquaHawk program to help customers monitor their daily/hourly water use and set up leak alerts.	No
0	Reduce System Water Loss	Reduce water use up to 35%	Annual construction projects are done to repair and replace water distribution infrastructure.	No
0	Landscape - Restrict or prohibit runoff from landscape irrigation	Reduce water use up to 0.5%		Yes
0	Other - Customers must repair leaks breaks, and malfunctions in a timely manner	Reduce water use up to 0.5%		Yes
0	Landscape - Other landscape restriction or prohibition	Reduce water use up to 5%		Yes
1	Other	Reduce water use up to 3%	Encourage water users to reduce water waste	Yes
1	Other	Reduce water use up to 3%	City water customers shall reduce water use by 10%	Yes
1	Other - Prohibit use of potable water for washing hard surfaces	Reduce water use up to 5%		Yes
1	Other-Require automatic shut of hoses	Reduce water use up to 0.5%		Yes
1	CII - Restaurants may only serve water upon request	Reduce water use up to 0.5%		Yes
2	Other	Reduce water use up to 3%	Encourage water users to reduce water waste	Yes
2	Other	Reduce water use up to 3%	City water customers shall reduce water use by 20%	Yes
2	Landscape - Other landscape restriction or prohibition	Reduce water use up to 5%		Yes
2	CII - Other CII restriction or prohibition	Reduce water use up to 5%		Yes
2	Water Features - Restrict water use for decorative water features, such as fountains	Reduce water use up to 0.5%		Yes
2	Other - Prohibit use of potable water for washing hard surfaces	Reduce water use up to 5%		Yes
2	Other - Require automatic shut of hoses	Reduce water use up to 0.5%		Yes
2	CII - Restaurants may only serve water upon request	Reduce water use up to 0.5%		Yes
2	Landscape - Limit landscape irrigation to specific times	Reduce water use up to 25%	Outdoor watering restricted to 3 days per week.	Yes
3	Other	Reduce water use up to 3%	Encourage water users to reduce water waste	Yes
3	Other	Reduce water use up to 3%	City water customers shall reduce water use by 30%	Yes
3	Other - Prohibit use of potable water for washing hard surfaces	Reduce water use up to 5%		Yes
3	Other - Require automatic shut of hoses	Reduce water use up to 0.5%		Yes
3	CII - Restaurants may only serve water upon request	Reduce water use up to 0.5%		Yes
3	Landscape - Limit landscape irrigation to specific times	Reduce water use up to 25%	Outdoor watering restricted to 2 days per week.	Yes
3	Landscape - Other landscape restriction or prohibition	Reduce water use up to 5%	All nonresidential users are to reduce irrigation by 40% for existing landscapes	Yes
3	Other	Reduce water use up to 0.5%	Prohibit vehicle washing unless use of a bucket and hose equipped with a self-closing valve.	Yes
3	Landscape - Prohibit certain types of landscape irrigation	Reduce water use up to 0.5%		Yes



Water Shortage Contingency Plan

Table 4. Water Shortage Contingency Plan Demand Reduction Actions (DWR Table 8-2) Cont.

Shortage Level	Demand Reduction Actions <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.</i>	How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i>	Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement? <i>For Retail Suppliers Only Drop Down List</i>
<i>Add additional rows as needed</i>				
3	Landscape - Other landscape restriction or prohibition	Reduce water use up to 5%	New or expanding landscapes is limited to drought tolerant trees, shrubs and ground cover. No new turf grass shall be placed, hydroseeded or laid	Yes
3	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Reduce water use up to 5%		Yes
3	Pools - Allow filling of swimming pools only when an appropriate cover is in place.	Reduce water use up to 0.5%		Yes
3	CII - Other CII restriction or prohibition	Reduce water use up to 0.5%	Operators of hotels, motels, and other commercial establishments offering lodging shall post in each room and site a notice of water shortage condition, approved by the Public Works Director	Yes
3	Water Features - Restrict water use for decorative water features, such as fountains	Reduce water use up to 0.5%		Yes
4	Other	Reduce water use up to 3%	Encourage water users to reduce water waste	Yes
4	Other	Reduce water use up to 3%	City water costumers shall reduce water use by 40%	Yes
4	Other - Prohibit use of potable water for washing	Reduce water use up to 5%		Yes
4	Other - Require automatic shut of hoses	Reduce water use up to 0.5%		Yes
4	CII - Restaurants may only serve water upon request	Reduce water use up to 0.5%		Yes
4	Landscape - Prohibit certain types of landscape irrigation	Reduce water use up to 0.5%	Irrigation of any landscaping except trees or drought tolerant plantings is prohibited	Yes
4	Landscape - Other landscape restriction or prohibition	Reduce water use up to 5%	All nonresidential users are to reduce irrigation by 40% for existing landscapes	Yes
4	Other - Prohibit use of potable water for washing	Reduce water use up to 5%		Yes
4	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Reduce water use up to 5%		Yes
4	Landscape - Other landscape restriction or prohibition	Reduce water use up to 5%	New or expanding landscapes is limited to drought tolerant trees, shrubs and ground cover. No new turf grass shall be placed, hydroseeded or laid	Yes
4	CII - Other CII restriction or prohibition	Reduce water use up to 0.5%	Operators of hotels, motels, and other commercial establishments offering lodging shall post in each room and site a notice of water shortage condition, approved by the Public Works Director	Yes
4	Water Features - Restrict water use for decorative water features, such as fountains	Reduce water use up to 0.5%		Yes
4	Other	Reduce water use up to 3%	No new water service connections or commitments for new water service shall be put in place	Yes
4	Other water feature or swimming pool restriction	Reduce water use up to 0.5%	Filling pools and spas is prohibited	Yes
5	Other	Reduce water use up to 3%	Encourage water users to avoid water waste	Yes
5	Other	Reduce water use up to 3%	City water costumers shall reduce water use by 50%	Yes



Water Shortage Contingency Plan

Table 4. Water Shortage Contingency Plan Demand Reduction Actions (DWR Table 8-2) Cont.

Shortage Level	Demand Reduction Actions <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.</i>	How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i>	Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement? <i>For Retail Suppliers Only Drop Down List</i>
<i>Add additional rows as needed</i>				
5	Other - Prohibit use of potable water for washing	Reduce water use up to 5%		Yes
5	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Reduce water use up to 5%		Yes
5	Landscape - Other landscape restriction or prohibition	Reduce water use up to 5%	New or expanding landscapes is limited to drought tolerant trees, shrubs and ground cover. No new turf grass shall be placed, hydroseeded or laid	Yes
5	CII - Other CII restriction or prohibition	Reduce water use up to 0.5%	Operators of hotels, motels, and other commercial establishments offering lodging shall post in each room and site a notice of water shortage condition, approved by the Public Works Director	Yes
5	Water Features - Restrict water use for decorative water features, such as fountains	Reduce water use up to 0.5%		Yes
5	Other	Reduce water use up to 3%	No new water service connections or commitments for new water service shall be put in place	Yes
5	Other water feature or swimming pool restriction	Reduce water use up to 0.5%	Filling pools and spas is prohibited	Yes
6	Other	Reduce water use up to 3%	Encourage water users to avoid water waste	Yes
6	Other	Reduce water use up to 3%	City water customers shall reduce water use by 60%	Yes
6	Other - Prohibit use of potable water for washing	Reduce water use up to 5%		Yes
6	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Reduce water use up to 5%		Yes
6	Landscape - Other landscape restriction or prohibition	Reduce water use up to 5%	New or expanding landscapes is limited to drought tolerant trees, shrubs and ground cover. No new turf grass shall be placed, hydroseeded or laid	Yes
6	CII - Other CII restriction or prohibition	Reduce water use up to 0.5%	Operators of hotels, motels, and other commercial establishments offering lodging shall post in each room and site a notice of water shortage condition, approved by the Public Works Director	Yes
6	Other	Reduce water use up to 3%	No new water service connections or commitments for new water service shall be put in place	Yes
6	Other water feature or swimming pool restriction	Reduce water use up to 0.5%	Filling pools and spas is prohibited	Yes
6	Water Features - Restrict water use for decorative water features, such as fountains	Reduce water use up to 0.5%		Yes



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The City may request that its customers reduce their water demands in response to any water shortage level through WMC Chapters 13.16 and 13.32. The City is currently updating WMC 13.32 for consistency with this WSCP. The demand reduction action categories are detailed further below.

During each shortage level, the City plans to impose water use restrictions on its customers and enforce the regulations and restrictions provided in WMC 13.32.040 and presented in Table 5, to achieve the percent demand reduction required by the water shortage stage.

Consumption Reduction Methods	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
General	City to encourage water customers and users to implement best water management and conservation practices, including avoiding water waste as defined in WMC Section 13.32.030 and following the City's landscape requirements (WMC Section 17.112) and State Model Water Efficient Landscape Ordinance (23 California Code of Regulations Section 490), except when they are replaced by more restrictive conditions imposed by the water stages in WMC Section 13.32.030.					
	All City water customers shall reduce water use by 10% (Stage 1), 20% (Stage 2), 30% (Stage 3), 40% (Stage 4), and 50% (Stage 5 and 6) from their normal water demand. ^(b)					
Washing Pavement	Hosing off sidewalks, driveways, and other hardscapes is prohibited.					
Hoses	Water hoses shall be equipped with a control nozzle capable of completely shutting off the flow of water except when positive pressure is applied.					
Restaurants	Water shall be served upon request					
Landscape Irrigation		Outdoor watering is restricted to three days per week.	Outdoor watering is restricted to two days per week.	Irrigation of any landscaping except trees or drought tolerant plantings is prohibited.		
			All nonresidential users are to reduce irrigation by 40% for existing landscapes.			
Exterior Washing of Buildings, Hardscapes, Boats, and Vehicles	The use of running water from a hose, pipe, or faucet for the purpose of cleaning buildings and outdoor hardscape surfaces is prohibited. ^(c)					
			Boats and vehicles shall be washed only at commercial washing facilities equipped with water recycling equipment or by use of a bucket and a hose equipped with a self-closing valve that requires operating positive pressure to activate the flow of water.	Boats, vehicles, and equipment shall be washed at commercial establishments that recycle water.		



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Table 5. Water Restrictions and Regulations^(a)

Consumption Reduction Methods	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Other			New or expanded landscaping is limited to drought tolerant trees, shrubs, and ground cover. No new turf grass shall be planted, hydroseeded, or laid.			
			Operators of hotels, motels, and other commercial establishments offering lodging shall post in each room and site a notice of water shortage condition, approved by the Public Works Director.			
			The operation of and introduction of water into ornamental fountains is prohibited.			
					No new water service connections or commitments for new water service shall be put in place until the City has returned to at least stage 2, water warning restrictions.	
				Filling pools and spas is prohibited.		
<p>(a) Water Conservation Ordinance, WMC §13.32.040</p> <p>(b) However, residential users whose total water use is already below the State provisional standard for residential indoor water use of 55 gallons (7.35 cubic feet) per person per day as stated in SBx7-7 (2009) shall not be required to further reduce their water use.</p> <p>(c) Except in the event the Director of Public Works, or designee, determines that such use is the only feasible means of correcting a potential threat to health and safety.</p>						

For all shortage levels, the City may also impose additional mandatory restrictions in addition to restrictions the State may impose. The City will monitor water production, demands, and changing conditions as discussed in Section 9 to determine the intensity of its public outreach, the extent of its enforcement actions, and the need to adjust its water shortage level declaration.

4.2 Supply Augmentation and Other Actions

The City’s water supply portfolio consists of treated surface water from the Sacramento River supplied by the WDCWA, local ASR and native groundwater, and recycled water as described in Chapter 6 of the City’s 2020 UWMP. The City manages the use of surface water supply conjunctively with the local groundwater. At any water shortage level and depending on the water shortage event, the City’s water supplies will be used to complement each other. For example, should its Sacramento River supply be reduced, the City may increase its groundwater pumping.

When surface water is significantly reduced, the City plans to use its wells to pump groundwater (both ASR and native groundwater) to meet water demands to meet the health and safety needs of its customers. The City currently owns five active groundwater wells, three active ASR groundwater wells, and six standby groundwater wells in its water service area. The three ASR wells have a total injection capacity of 3.75 mgd (11.5 acre-feet [AF] per day) and a total extraction capacity of 8.4 mgd (25.8 AF per day).



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Should the City’s water supply portfolio be insufficient to meet the reduced demands of its customers, the City may augment its water supply and take other actions as summarized in Table 6 (DWR UWMP Table 8-3). The shortage level for which each action will commence implementation is provided, along with the estimated extent that the action will reduce the shortage gap. Details regarding operational changes in response to water shortage are provided in Section 4.3.

Table 6. Supply Augmentation and Other Actions (DWR Table 8-3)

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool</i>	How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i>	Additional Explanation or Reference <i>(optional)</i>
<i>Add additional rows as needed</i>			
0	Expand Public Information Campaign	Up to the shortage gap	Purpose is to help boost and support water conservation measures at all times and increase outreach as shortage gap increases
0	Other Actions (describe)	Up to the shortage gap	Other actions = Water use surveys: Utility customers are able to monitor daily/hourly water use and set up leak alerts through AquaHawk, the City's water use dashboard.
0	Other Actions (describe)	Up to the shortage gap	Other actions = Provide water conservation rebates: The City currently offers rebates for mulch (up to \$100), rain barrels (up to 2 purchases, \$75 each) and weather-based irrigation controller rebates (up to \$150).
0	Other Actions (describe)	Up to the shortage gap	Other actions = Water main replacement projects: The City does annual construction projects to repair and replace water distribution infrastructure.
1	Expand Public Information Campaign	Up to the shortage gap	10% water demand reduction anticipated
1	New recycled water	Up to the shortage gap	Expand recycled water
1	Other Purchases	Up to the shortage gap	Pursue water purchases (WDCWA)
1	Stored Emergency Supply	Up to the shortage gap	Stored ASR water
2	Expand Public Information Campaign	Up to the shortage gap	20% water demand reduction anticipated
2	Other Purchases	Up to the shortage gap	Pursue water purchases (WDCWA)
2	Stored Emergency Supply	Up to the shortage gap	Stored ASR water
3	Expand Public Information Campaign	Up to the shortage gap	30% water demand reduction anticipated
3	Other Purchases	Up to the shortage gap	Pursue water purchases (WDCWA)
3	Stored Emergency Supply	Up to the shortage gap	Stored ASR water
4	Expand Public Information Campaign	Up to the shortage gap	40% water demand reduction anticipated
4	Other Purchases	Up to the shortage gap	Pursue water purchases (WDCWA)
4	Stored Emergency Supply	Up to the shortage gap	Stored ASR water
5	Expand Public Information Campaign	Up to the shortage gap	50% water demand reduction anticipated
5	Other Purchases	Up to the shortage gap	Pursue water purchases (WDCWA)
5	Stored Emergency Supply	Up to the shortage gap	Stored ASR water
6	Expand Public Information Campaign	Up to the shortage gap	60% water demand reduction anticipated
6	Other Purchases	Up to the shortage gap	Pursue water purchases (WDCWA)
6	Stored Emergency Supply	Up to the shortage gap	Stored ASR water



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4.3 Operational Changes

The City may modify its operations on a short-term or long-term basis in response to any water shortage condition. The City may take any one or a combination of the following actions.

1. To facilitate supply augmentation, the City may operate any combination of active and standby wells (including ASR wells) in the water service areas to address shortages in surface water supplies.
2. The City may expedite repairs of leaks in its water distribution system. All meter leaks and emergency breaks would be repaired the same day they are reported. Non-emergency service line and main breaks would be repaired 24 hours after detection.
3. During the duration of the water shortage condition, the City may limit its regular maintenance water system flushing operations such that flushing is conducted only in areas with known water quality issues.

4.4 Emergency Response Plan

As stated in Section 3, the City's water shortage levels outlined in WMC Section 13.32.040 apply to both foreseeable and unforeseeable water supply shortage conditions, including catastrophic water shortage conditions.

The City's *Water System Emergency Response Plan* (ERP) addresses catastrophic water shortage water conditions. The ERP is expected to be completed in May 2021. The ERP outlines response procedures associated with unforeseeable incidents such as water supply contamination, earthquake, infrastructure failure, and other events. The ERP includes actions to be taken in preparation for, during, and recovery from such events.

The City's response planning for continued water service includes the use of standby generators, water purification supplies and equipment, emergency drinking water storage, and water trucks. Water storage, treatment, and pumping facilities have been constructed to meet earthquake safety standards and are inspected regularly.

To maintain the security of the City water system, the ERP is maintained as a confidential document and may not be incorporated in this UWMP.

5.0 COMMUNICATION PROTOCOLS

In the event of a water shortage, the City must inform their customers, the general public and interested parties, and local, regional, and state entities. Communication protocols for foreseeable and unforeseeable events are provided in this section. In any event, timely and effective communication must occur for appropriate response to the event. City staff are provided cell phones and City email accounts to communicate internally and externally.



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5.1 Communication for Foreseeable Events

Water shortage may be foreseeable when the City conducts its AWSDA as described in Section 2. When the City determines the potential of a water shortage event, the City Council may find, determine and declare a water shortage emergency in accordance with WMC §13.32.040.

The City will hold a public meeting to present the current or predicted shortage as determined by the AWSDA. At the public meeting, the City Council will determine if a water shortage emergency condition exists and the degree of the emergency. The City Council will consider the shortage response actions triggered or anticipated to be triggered by shortage level. As necessary, the City Council will act on the water shortage emergency declaration, associated water shortage level, and shortage response actions.

The following communications protocol and procedures will be followed. The City may trigger any of these communication protocols at any water shortage level.

1. If a water shortage emergency is anticipated, the City will coordinate interdepartmentally, with the WDCWA, City of Davis, UC Davis, and with Yolo County for the possible proclamation of a local emergency.
2. The City Council will hold a duly noticed public meeting in which the AWSDA findings and recommendations for a water shortage emergency and shortage response actions are presented.
3. The City will issue notices as described below for foreseeable water shortage condition, water shortage emergency, and response actions.
 - a. Customers, the general public, and interested parties will be informed through the City's website, press coverage of council meetings, the local newspaper: the Daily Democrat, press releases, and customer water bills.
 - i. For a true water emergency, the City will send texts or robocall customers in Woodland using Yolo County's system.
 - b. Public entities and officials (local, regional, and state agencies) will be informed by email.
 - c. The following communication methods will be used at different shortage levels:
 - i. Shortage Level 1: Blog posts on the EnviroWoodland Newsletter
 - ii. Shortage Level 2: Bill stuffers or newsletters
 - iii. Shortage Levels 3 to 6: Press releases

5.2 Communication for Unforeseeable Events

Water shortage may occur during unforeseeable events such as earthquakes, fires, infrastructure failures, civil unrest, and other catastrophic events. The City's ERP provides specific communication protocols and procedures to convey water shortage contingency planning actions during these events. The City may trigger any of these communication protocols at any water shortage level, depending on the event.

In general, communications and notifications should proceed along the chain of command. Notification decisions will be made under the direction of the Incident Commander. External communications will be managed by the Public Information Officer (PIO). All City staff are provided their communication responsibilities. Utility Engineering staff will work with the Chief Plant Operator and Utilities Administrator



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to notify regulatory agencies. The ERP provides a list of relevant contacts to notify at the local, regional, and state level.

The PIO is the official spokesperson for the City and is the only staff authorized to speak directly to public media representatives. The PIO maintains a list of contacts to disseminate information to the public. Additionally, the City maintains profiles on social media platforms including Facebook and Twitter. These profiles may be used to convey information to staff and the public, in addition to their website and email.

6.0 COMPLIANCE AND ENFORCEMENT

WMC 13.32.040 supports the implementation of the City's water shortage contingency actions. This code section includes provisions for compliance and enforcement of its water use regulations, restrictions, and prohibitions and are available on the City's website. WMC Chapter 13.32 is highlighted on the City's water conservation website to notify the public of year-round regulations and water restrictions.

When a water shortage is anticipated, the City Council holds a duly noticed public meeting to determine the degree of the water shortage emergency. After the public meeting, the City Council will adopt a resolution stating the degree of the water shortage emergency and the regulations and restrictions that should be enforced in response to the shortage.

Since the City service area is fully metered, customer water use can be quantified and compared to determine their extent of compliance to water reduction requirements. The City may also become aware of non-compliance through its water waste reporting outreach or through staff inspections. Non-compliance is deemed as a violation and is classified as an infraction. Each day of continued violation is considered as a separate offense.

The City Manager and duly designated representatives are authorized to enforce provisions of WMC Chapter 13.32 and make determinations with regards to the customer water allocations provided in WMC Chapter 13.32. For these purposes, they have the power and discretion of a law enforcement office.

6.1 Shortage Level Enforcement and Penalties

Enforcement and penalties for non-compliance with each stages' restrictions are provided in WMC §13.32.040. When the City becomes aware of a customer violating, causing, or permitting a violation of the restrictions prohibitions presented in Table 5 for any of the Water Shortage Stages, the City issues a notice that describes the nature of the violation and includes an order that the violation be corrected within a stated period. Upon occurrence of a second violation or failure to correct the initial violation, the City issues a second notice ordering immediate correction and imposing a surcharge of \$100 per day for each day the violation continues. The City Manager may issue an order to cease and desist until appropriate remedial actions are taken. For continued violation, the City Manager may order discontinuance of service.

The first billing period after the effective date of the Council's declaration of a water shortage emergency or the effective date stated in the resolution is considered as an adjustment period during which no penalties will be imposed for water usage in excess of the allocation described in Table 6.



Water Shortage Contingency Plan

Beginning with the second billing period after the effective date, any customer who exceeds the established allocation in any monthly billing cycle is charged an excess use charge in addition to all other charges. For continued violation, the customer is issued a warning. If the violation is not corrected, the City may install a flow restricting device on the customer's water service which remains in place for at least 48 hours and until the customer has paid the removal charges.

If the customer again violates water use restrictions, after removal of a flow restricting device by the City, the City may install a flow restricting device which remains in place for at least two weeks and until payment for removal by the City. Further violations, removal of or by-passing the flow restricting device may result in termination of water service.

6.2 Appeal and Exemption Process

Per WMC section 13.16.130 and 13.16.140, customers may appeal a determination, order, or directive of the City Manager by submitting a written appeal notice to the City Clerk within seven days of receiving the determination, order, or directive. The written appeals should include supporting facts and reasons. The City Council may hold an appeal hearing, where the appellant and the hearing officer are heard. At the conclusion of hearing the appeal, the City Council may affirm, reverse or modify the determination, order or directive of the City Manager. The City Council's action on the appeal is final.

7.0 LEGAL AUTHORITIES

Contingency Plan. In 1991, the City adopted a "No-Waste" ordinance. This ordinance was amended in 2014 with the City's adoption of Ordinance No. 1564, to ensure compliance with all federal, state, and local requirements, including but not limited to, SBx7 7 and Model Water Efficient Landscape Ordinance (MWEL) (23 CCR §§ 490 et seq.). The City's ordinance was incorporated into the WMC Sections 13.16.100 – 13.16.150. At time of preparation of this WSCP, the City is updating WMC Section 13.32.040 to incorporate updates presented herein.

When a water shortage is determined, the City will coordinate interdepartmentally, with the WDCWA, and with Yolo County for the possible proclamation of a local emergency in accordance with California Government Code, California Emergency Services Act (Article 2, Section 8558).

In accordance with WMC §13.32.040 and California Water Code Chapter 3, Division 1, Section 350 et seq, the City Council is required, unless an imminent emergency exists, to conduct a duly noticed public meeting for the purpose of determining whether a water shortage emergency condition exists and, if so, the degree of the emergency and what regulations and restrictions should be enforced in response to the shortage. The City shall declare a water shortage emergency in accordance with CWC Chapter 3 Division 1.

Water Code Section Division 1, Section 350

...The governing body of a distributor of a public water supply...shall declare a water shortage emergency condition to prevail within the area served by such distributor whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to the extent that there would be insufficient water for human consumption, sanitation, and fire protection.

The water shortage emergency declaration triggers communication protocols described in Section 5 of this WSCP and compliance and enforcement actions described in Section 6 of this WSCP.



Water Shortage Contingency Plan

8.0 FINANCIAL CONSEQUENCES OF WSCP

The City maintains an adequate operational reserve to protect against a temporary water shortage. The City anticipates reduced revenue due to decreased water use by its customers and additional costs associated with implementing water use restrictions and associated compliance actions. Reduced revenue and costs associated with compliance actions are considered in the City's water rate study and is built into the City's financial reserves.

9.0 MONITORING AND REPORTING

The City's water system is fully metered, from its water supply sources to individual customer meters. These meters may be used as monitoring tools for compliance and reporting purposes. These meters can be read as often as needed to track the extent of the effectiveness of the City's response actions. Water production and water use can be compared to previous periods. Water use can be compared per customer sector or per individual customer.

Customers' water meters can be read per billing period to track the extent of their compliance with the City's water use restrictions. The first billing period after the effective date of the Council's declaration of a water shortage emergency is considered as an adjustment period during which no penalties will be imposed for water usage in excess of the allocation. The second and subsequent billing period after the effective date is used to determine if a customer exceeds the established allocation for the City Council-declared water shortage level as discussed in Section 4.1/WMC 13.32.040. The City may use readings from water meters to track compliance and determine required enforcement actions.

The City's meters at its WDCWA point of delivery and groundwater production wells provide a systemwide overview of water supply and demands and assess progress in meeting the water shortage objectives. Water production information may be read on a daily basis. The information collected from these meters allows the City to determine the extent of implementation of public outreach and enforcement actions, and adjust other water shortage response actions.

At the time of preparation of this WSCP, the State Water Board is preparing regulations for monthly reporting of water production and other uses, along with associated enforcement metrics. The City regularly records its water meter readings, along with enforcement actions, ensuring that the City will be able to comply with upcoming reporting requirements.

10.0 WSCP REFINEMENT PROCEDURES

This WSCP is an adaptive management plan. It is subject to refinements as needed to ensure that the City's shortage response actions and mitigation strategies are effective and produce the desired results. Based on monitoring described in Section 9 and the need for compliance and enforcement actions described in Section 6 of this WSCP, the City may adjust its response actions and may modify its WSCP. When a revised WSCP is proposed, the revised WSCP will undergo the process described in Section 12 for adoption by the City Council and distribution to the City, its customers, and the general public.



Water Shortage Contingency Plan

10.1 Systematic Monitoring

The City will monitor meters at its water sources to evaluate the overall effectiveness of its response actions in meeting the declared water shortage level. Should overall demands not meet or exceed the goals of the declared water shortage level, the intensity of public outreach for water conservation and the extent of enforcement of water use restrictions may be increased. Conversely, should overall demands continue to be substantially less than the goals of the declared water shortage level, the intensity of public outreach for water conservation and the extent of enforcement of water use restrictions may be decreased.

In WMC Chapter 13.32.040, the City has set minimum allocations for each customer sector to maintain health and safety standards and allows for reasonable adjustments to the allocations. The City may implement operational changes and implement supply augmentation in combination with enforcement of its water use restrictions and prohibitions to meet the objectives of the water shortage level while maintaining overall public health and safety.

10.2 Feedback from City Staff and Customers

Feedback from City staff and the public is important in refining or incorporating new actions. The City seeks input from staff who interface with customers to gauge the effectiveness of its response actions and for response action ideas.

Customer water meter data may be evaluated for each customer sector or each individual customer. The City tracks water use violations and may evaluate their frequency to determine restrictions that customers may not be able to meet. This evaluation may also show water demand reduction actions that customers may effectively implement.

The City seeks input from its customers and the general public through its website, through public hearings, and through regularly scheduled City Council meetings.

11.0 SPECIAL WATER FEATURE DISTINCTION

The City distinguishes special water features, such as decorative fountains and ponds, differently from pools and spas. Special water features are regulated separately. Regulations under WMC13.32.040 prohibit the use of non-recirculated water in fountains or other decorative fountains.

12.0 PLAN ADOPTION, SUBMITTAL, AND AVAILABILITY

This WSCP is adopted concurrently with the City's 2020 UWMP, by separate resolution. Prior to adoption, a duly noticed public hearing was conducted. A hard copy of this WSCP will be submitted to DWR within 30 days of adoption, along with an electronic copy.

No later than 30 days after submittal to DWR, copies of this WSCP will be available at the City's offices. A copy will also be provided to Yolo County. An electronic copy of this WSCP as well as the 2020 UWMP will also be available for public review and download on the City's website.



Appendix J

Municipal Code: Chapter 13.16 and Chapter 13.32

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Woodland Municipal Code

Title 13 PUBLIC SERVICES

Chapter 13.16 WATER SERVICE

13.16.010 Connection to water service required.

All buildings within the City limits, served with water for any purpose, shall be connected with the City water service. It is unlawful for any owner of such premises to fail to cause such connection to be made unless, in the opinion of the Public Works Director or authorized representative, it is impractical to connect to the City water system. No building shall be connected to any water supply source other than the City water system without a valid permit issued by the Public Works Director. (Prior code § 23C-7-1)

13.16.020 Connection to water service outside of City limits restricted.

No connection with City water service shall be made with a water user located outside of the City limits unless such user first has obtained permission for such connection from the City Council. (Prior code § 23C-7-2)

13.16.030 Charges for connection with City water service.

A. It is hereby found by the City Council that the prospective development of the City by construction of residential, commercial and manufacturing structures and buildings and the occupancy thereof, will cause the City to incur costs estimated to be \$195,086,000.00 to provide the necessary water treatment facilities, pipelines, and sources of surface water to serve such new development. It is further found that equity and proper fiscal management of the City require that such additional water system improvements as caused by such future development be financed in part by those persons constructing and using such buildings. Based on the foregoing, any applicant for new water service shall pay a water capacity charge to the City at the time of application. These charges may be adopted by ordinance or by resolution.

B. The charge imposed pursuant to subsection A is intended to comprise a "capacity charge" within the meaning of Government Code Section 66013 as it exists as of the date of adoption of this ordinance. All revenue derived from this capacity charge shall be held and maintained in compliance with subsections (c) and (d) of Section 66013 as they may be amended, and in accordance with other applicable law.

C. In addition to the water capacity charge described in subsection A, prior to connection to the City water system each person making such request shall pay a water connection charge for initial connection of his or her premises to the City water system. The amount of the charge shall be fixed by resolution of the City Council which, among other things, may take into account administrative expense and the cost of installing various water taps, service pipes, meters and shutoff valves and provide for varying charges in accordance with the relative right, difficulty or cost to connect. (Prior code § 23C-7-3)

13.16.040 Rate schedule for use of water service.

The City Council shall fix by ordinance or resolution the rates for use of the City water system and the ordinance or resolution, among other things, shall take into account the quantity of water used and the cost of maintaining City water facilities to deliver the water. In addition, rates may differ between users inside of

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13.16.050 Standby service.

Standby water service for fire protection or domestic use only may be obtained if approved by the City Engineer or designated representative. Rates for standby service shall be fixed by agreement. (Prior code § 23C-7-5)

13.16.060 Construction project rate.

Charges for the actual cost of water taps, meters, installation, and the like, shall be levied for water service to any building or construction project. The amount of such charges shall be fixed by resolution of the City Council and payment thereof shall be made prior to issuance of a building permit or delivery of the water, whichever first occurs. In the alternative to the above charges, the City may require that water consumed be measured and paid for at meter rates. The cost of placing and removing temporary connections and meters shall be paid for by the owner or contractor. Notwithstanding the foregoing, however, water obtained from a fire hydrant for purposes of jetting trenches or street construction shall not be subject to the requirement of a building permit or payment of a fee therefor when used within a City-owned right-of-way. (Prior code § 23C-7-6)

13.16.070 Charge in absence of direct connection.

Whenever any City water is furnished to the premises, but the water is not connected to the dwelling, store or shop on the premises, the same rates shall be charged as if the water were connected directly to the dwelling, store, or shop on the premises. (Prior code § 23C-7-7)

13.16.080 Special charges.

The City Council may direct the City Manager or designated representative to make charges for water other than, or different from the established rates, in the event that special circumstances make special charges reasonable and fair. (Prior code § 23C-7-8)

13.16.090 Information for fixing rates required.

The City Engineer or designated representative may require any water user to give under oath such information as is necessary to determine the proper water rates for such water user. Should such water user refuse to give such information under oath, the City Engineer or designated representative shall fix the rates to be charged such water user, subject to modification by the City Council on application of such water user. (Prior code § 23C-7-9)

13.16.100 Prohibited acts.

- A. Connections Without Permit or Safeguards. It is unlawful for any person to attach or cause attachment of a service pipe to a City water main, fire hydrant, or the like, or to allow attachment of another service pipe to one's own City authorized service pipe without first obtaining permission to do so from the City

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Engineer or designated representative, and no connection shall be made between the City water system and any part of a sewer system without first providing the safeguards required by the State Health and Safety Code.

- B. Use of Pipe or Hydrant Following Shutoff. Whenever, for any cause, the Public Works Director or designated representative shall shut off any hydrant or pipe carrying or discharging water from the works of the City, it is unlawful for any person to open such hydrant or pipe or to turn on or use any water from such hydrant or water pipe without first obtaining written permission from the City Engineer or designated representative or, if required, a fire hydrant permit.
- C. Obstructing Access to Water Facilities. No person shall place upon or about any fire hydrant, water gate, or curb-stock or stopcock connected with the City's water system, any building material or other obstruction that prevents free access to same.
- D. Water Waste Violations. No person shall commit water waste, as defined in Section 13.32.030.
- E. Violations of Water Shortage Stages. No person shall violate the water shortage stages and restrictions as detailed in Section 13.28.040. (Prior code § 23C-7-10)

13.16.110 Violations.

It is unlawful for any user and/or person to violate or fail to comply with any of the requirements of this chapter. Causing, permitting, aiding, abetting, or concealing a violation of any provision of this chapter shall constitute a violation of this chapter. A violation of the provisions of this chapter shall occur irrespective of the negligence or intent of the violator. Violations of this chapter shall be punishable either alternatively or consecutively, by civil or criminal prosecution or both. (Prior code § 23C-7-10.1)

13.16.120 Enforcement measures.

- A. The Public Works Director, or designee, shall administer, implement, and enforce the provisions of this chapter.
- B. In lieu of any remedies the City may have, and at the City's sole discretion, the City may determine a violation of this chapter to be a nuisance, which shall be enforced pursuant to Chapter 9.20, resulting in a notice to abate or an administrative citation. Pursuant to Chapter 9.20, fines imposed for an administrative citation shall be: (1) \$100.00 for a first violation; (2) \$200.00 for a second violation of the same provision within one year; and (3) \$500.00 for each additional violation of the same provision within one year.
- C. Any person who has not abated the nuisance within the time prescribed by the City, failed to appeal the notice to abate in accordance with Section 13.16.130, or failed to appeal an administrative citation in accordance with Section 9.20.070, and in addition to any remedies the City may have, the City may take any or all of the following additional enforcement actions:
1. Installing a flow-restriction device or other water conservation device at such person's premises at that person's expense;
 2. Requiring a commercial, industrial, or institutional user who does not currently have a separate landscape meter to install a landscape meter at the sole cost and expense of the user;
 3. Recording the violations on the property title provided the water customer is the property owner;
 4. Placing liens on the property to recover any costs incurred by the City of Woodland provided the water customer is the property owner; and/or
 5. Issuing a criminal citation charged as either an infraction or misdemeanor. (Prior code § 23C-7-10.2)

13.16.130 Appeal hearing.

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Any person receiving a notice to abate as set forth above shall have the right to appeal the notice, and to have a hearing, as set forth in Section 9.04.070. The Public Works Director may appoint the hearing officer. (Prior code § 23C-7-10.3)

13.16.140 Appeal of decision.

Any person entitled to a hearing under Section 13.16.130 may appeal the decision of the hearing officer to the City Council in accordance with the procedures set forth in Section 9.04.070(C). (Prior code § 23C-7-10.4)

13.16.150 Remedies cumulative.

The remedies provided in this chapter are cumulative and are in addition to all other remedies provided by law. The enumeration of remedies stated in this chapter shall not preclude the application of any other remedies not specifically enumerated. (Prior code § 23C-7-10.5)

13.16.160 Shutoff valve required.

Each consumer shall install a shutoff valve in his or her service pipe downstream from the City's service connection shutoff valve so that repairs can be made to the consumer's water system without calling the City to shut off water service. (Prior code § 23C-7-11)

13.16.170 Notification as to pending street grading or excavation required.

All persons who open, grade, regrade, fill, excavate or work on a street shall give 10 days' written notice to the City Engineer to cause removal or displacement of any water mains, pipes, fittings, meters or other waterworks materials which may interfere with such street work, and on failure to so furnish such notice, any damage resulting from such failure shall be charged against the person responsible. (Prior code § 23C-7-12)

13.16.180 Discontinuance of service for repairs.

The supply of City water may be discontinued at any time without notice to the water user, when required by the necessities of the service of the Water Department or of any other department of the City government, and the City shall in no way be liable for damage resulting from such discontinuance. (Prior code § 23C-7-13)

13.16.190 Inspections.

It is unlawful for any person to interfere or seek to interfere with any inspection by the City Engineer or designated representative of any fixture or water using or distributing device to which City water is connected; provided, that before entering occupied dwellings or premises for the purpose of making an inspection, the consent of the occupant thereof shall be secured or 24 hours' written notice of the intention to so enter and inspect shall be served upon the occupant by the City Engineer or designated representative. (Prior code § 23C-7-14)

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Woodland Municipal Code

Title 13 PUBLIC SERVICES

Chapter 13.32 WATER CONSERVATION

13.32.010 Purpose.

The purpose of this chapter is to ensure compliance with all Federal, State, and local requirements, including, but not limited to, the City of Woodland Urban Water Management Plan, the State of California Water Conservation Act of 2009 (SBx7-7), and the Model Water Efficient Landscape Ordinance (23 CCR Section 490 et seq.), relating to water conservation and water shortage mitigation for the protection of public health, safety, and welfare by:

- A. Reducing the per capita water consumption throughout the City of Woodland;
- B. Establishing a plan to define water shortage stages;
- C. Protecting and conserving the City's supply of water during specified times of emergency and/or crisis; and
- D. Minimizing and/or eliminating the waste of water through voluntary compliance or punitive action, if necessary. (Prior code § 23C-11-1)

13.32.020 Scope.

The provisions of this chapter shall apply to all water users within the City's territorial limits and to all customers, users, and/or recipients of the City's water service. (Prior code § 23C-11-2)

13.32.030 Definitions.

Unless otherwise indicated, the following definitions shall apply to all provisions of this chapter:

"Conservation" means measures that limit the amount of water used to that which is reasonably necessary for the beneficial use to be served.

"Drought tolerant" means any plant, tree, shrub, or ground cover listed as low or very low water use in WUCOLS (Water Use Classifications of Landscape Species) or other guidance provided by the Director of Public Works or designee.

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

"Lake Shasta critical years" means reductions that go into effect when the Bureau of Reclamation forecasts that the full natural inflow into Shasta Lake will be equal to or less than 3.2 million acre-feet.

"Nonresidential" means any commercial, industrial, or institutional property.

"Normal water demand" means the average of the water use for that month during the three most recent years in which the City had a reliable water supply, as defined below.

"Reliable water supply" means the water supply adequate to meet all projected demands, as determined by the Public Works Director or designee, with at least two wells in reserve to assure reliability. To make this determination, the City will consider all relevant factors, which may include, but would not be limited

to, groundwater levels, treatment and pumping capacity, and, from 2016 forward, Term 91 curtailments and Lake Shasta critical year reductions for surface water.

“Residential” means any dwelling, single-family home, duplex, condominium, and any individual units within a multifamily building.

“Term 91” means a State Water Resource Control Board water permit condition that curtails downstream diverters from taking diversions from streams when the State Water Project and Central Valley Project are releasing water from storage to meet the water quality standards for the delta.

“Water waste” means:

1. Causing or permitting excessive water to discharge, flow, or run to waste into any gutter, sanitary sewer, watercourse, or storm drain, or to any adjacent property, from any tap, hose faucet, pipe, sprinkler, or nozzle. In the case of irrigation, “discharge,” “flow,” or “run to waste” means that the earth intended to be irrigated has been saturated with water to the point that excess water flows over the earth to waste.
2. Allowing water fixtures or heating or cooling devices to leak or discharge excessively.
3. Backwashing so as to discharge to waste from swimming pools, decorative basins or ponds in excess of the frequency necessary to ensure the healthful condition of the water or in excess of that required by standards for professionally administered maintenance or to address structural considerations.
4. Operation of an irrigation system that applies water to an impervious surface or that is in disrepair.
5. Irrigation of landscaping during rainfall.
6. Any other factors as determined by the Public Works Director and his or her designee. (Prior code § 23C-11-3)

13.32.040 Water shortage stages and restrictions.

This section describes the normal water supply and four water shortage stages and restrictions in effect during times of normal water supply and during water shortage stages.

A. Normal Water Supply. When the City’s water supply is adequate to meet all projected demands (“normal water supply”), as determined by the Public Works Director or designee, all water consumers are encouraged to be aware of water consumption and use water wisely. Water shall be used for beneficial purposes only; all unnecessary and wasteful uses of water are prohibited. Under the normal water supply stage, the following shall apply:

1. Water waste, as defined in Section 13.32.030, is prohibited.
2. All landscaping installed in the City of Woodland shall comply with the State Model Water Efficient Landscape Ordinance (23 California Code of Regulations § 490 et seq.) or the City landscape requirements (Chapter 17.112 of this code), whichever is more restrictive.

B. Stage One, Water Alert. A stage one, water alert shall exist when the City’s reliable water supply is adequate to meet no more than 90% of projected demands as determined by the Public Works Director or designee. An objective of the stage one, water alert is to reduce water usage by 10% from the normal water demand level. Pursuant to California Water Code Section 350 et seq., unless an immediate emergency exists, the City will hold a noticed public hearing prior to declaring a water shortage. Under a stage one, water alert, the following restrictions shall apply:

1. All normal water efficiency measures shall continue in place as required by subsection A of this section, except when they are replaced by more restrictive conditions imposed by this section.

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2. All City water customers shall reduce water use by 10% from their normal water demand. However, residential users whose total water use is already below the State provisional standard for residential indoor water use of 55 gallons (7.35 cubic feet) per person per day as stated in SBx7-7 (2009) or an adjusted standard set by the California Legislature shall not be required to further reduce their water use.
 3. Hosing of hardscape surfaces except for health and safety purposes shall be prohibited.
 4. Water hoses shall be equipped with a control nozzle capable of completely shutting off the flow of water except when positive pressure is applied.
 5. Restaurants shall serve water only upon request.
 6. The City may impose other or further regulations as the City Council may adopt after conducting a public hearing.
- C. Stage Two, Water Warning. A stage two, water warning shall exist when the City's reliable water supply is adequate to meet no more than 75% of projected demands as determined by the Public Works Director or designee. An objective of the stage two, water warning is to reduce water usage by 25% from the normal water demand level. Pursuant to California Water Code Section 350 et seq., unless an immediate emergency exists, the City will hold a noticed public hearing prior to declaring a water shortage. Under a stage two, water warning, the following restrictions shall apply:
1. All stage one, water alert restrictions shall apply as required by subsection B of this section, except when they are replaced by more restrictive conditions imposed by this section.
 2. All residential users are to reduce water use by 25% from their normal water demand. However, residential users whose total water use is already below the State provisional standard for residential indoor water use of 55 gallons (7.35 cubic feet) per person per day as stated in SBx7-7 (2009) or an adjusted standard set by the California Legislature shall not be required to further reduce their water use.
 3. All nonresidential users are to reduce irrigation by 40% for existing landscapes.
 4. The use of running water from a hose, pipe, or faucet for the purpose of cleaning buildings and outdoor hardscape surfaces is prohibited, except in the event the Director of Public Works, or designee, determines that such use is the only feasible means of correcting a potential threat to health and safety.
 5. New or expanded landscaping is limited to drought tolerant trees, shrubs, and ground cover. No new turf grass shall be planted, hydroseeded, or laid.
 6. Boats and vehicles shall be washed only at commercial washing facilities equipped with water recycling equipment or by use of a bucket and a hose equipped with a self-closing valve that requires operating positive pressure to activate the flow of water.
 7. Operators of hotels, motels, and other commercial establishments offering lodging shall post in each room and site a notice of water shortage condition, approved by the Public Works Director.
 8. The operation of, and introduction of water into, ornamental fountains is prohibited.
 9. The City may impose other or further regulations as the City Council may adopt after conducting a public hearing.
- D. Stage Three, Water Crisis. A stage three, water crisis shall exist when the City's reliable water supply is adequate to meet no more than 50% of projected demands as determined by the Public Works Director or designee. An objective of the stage three, water crisis is to reduce water usage by 50% from the normal water demand level. Pursuant to California Water Code Section 350 et seq., unless an immediate emergency exists, the City will hold a noticed public hearing prior to declaring a water shortage. Under a stage three, water crisis, the following restrictions shall apply:

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1. All stage two, water warning restrictions shall apply as required by subsection C of this section, except when they are replaced by more restrictive conditions imposed by this section.
 2. All residential users are to reduce water use by 50% from their normal water demand. However, residential users whose total water use is already below the State provisional standard for residential indoor water use of 55 gallons (7.35 cubic feet) per person per day as stated in SBx7-7 (2009) or an adjusted standard set by the California Legislature shall not be required to further reduce their water use.
 3. No new water service connections or commitments for new water service shall be put in place until the City has returned to at least stage 2, water warning restrictions.
 4. Irrigation of any landscaping except trees or drought tolerant plantings is prohibited.
 5. Boats, vehicles, and equipment shall be washed at commercial establishments that recycle water.
 6. Filling pools and spas is prohibited.
 7. The City may impose other or further regulations as the City Council may adopt after conducting a public hearing.
- E. Stage Four, Water Emergency (Health and Safety Only). A stage four, water emergency shall exist when there is major failure of a reliable water supply, storage, or distribution system, and the water shortage is greater than 50% of projected demands as determined by the Public Works Director or designee. An objective of the stage four, water emergency is to reduce water usage by more than 50% from the normal water demand level. Pursuant to California Water Code Section 350 et seq., unless an immediate emergency exists, the City will hold a noticed public hearing prior to declaring a water shortage. Under a stage four, water emergency, the following restrictions shall apply:
1. All stage three, water crisis restrictions shall apply as required by subsection D of this section, except when they are replaced by more restrictive conditions imposed by this section.
 2. The City shall impose other or further regulations, which the City Council determines to be necessary to ensure that water supply is used only to meet public health and safety needs. The City Council shall adopt such regulations after conducting a public hearing. (Prior code § 23C-11-4)

13.32.050 Fire, emergencies, and other exemptions.

Nothing in this chapter shall be construed to apply to the use of water for purposes of extinguishing fires or addressing any other emergency service. The use of water to meet regulatory requirements such as flushing pipes, pumping to waste for wells, and other regulatory requirements are exempt from the provisions of this chapter. (Prior code § 23C-11-5)

13.32.060 Determination of water consumption reductions.

Should the City need to determine water consumption reductions for individual water users, the methodology below will be used for making that determination.

- A. Whenever this chapter requires a reduction in residential water, the base year for measurement shall be the normal water demand for that property. If that data is not available for a property, allocations will be based on water use for similar properties with similar household sizes. If there is a lack of adequate supporting data for such an allocation, the normal water demand shall be based on the average use per Woodland household. This comparison will be used to determine both low and high outliers and noncompliance that may warrant individual contact. The Public Works Director, or designee, may elect to base a reduction on a consumption calculation in lieu of the base year if use was, in the Director's or designee's sole opinion, either excessive or extraordinarily low.

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B. Whenever this chapter requires a reduction in commercial or industrial consumption of water for irrigation purposes, the base year for measurement shall be the normal water demand for that property. If that data is not available for a property, allocations will be based on water use for similar properties. This comparison will be used to determine both low and high outliers and noncompliance that may warrant individual contact. The Public Works Director, or designee, may elect to base a reduction on a landscape water consumption calculation in lieu of the base year if use was, in the Director's or designee's sole opinion, either excessive or extraordinarily low. For landscaping installed subsequent to the base year, the calculations shall be based on landscape water consumption calculations submitted with the landscape plan, or water consumption the previous year, whichever is less. (Prior code § 23C-11-6)

13.32.070 Violations.

Any violation of this chapter shall be enforced pursuant to Section 13.16.120. (Prior code § 23C-11-7)

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UWMP Adoption Resolution

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RESOLUTION NO. 7720

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF WOODLAND TO ADOPT THE URBAN WATER MANAGEMENT PLAN, CIP 21-04

WHEREAS, In accordance with the Urban Water Management Planning Act (California Water Code Section 10610 et seq.), the City of Woodland is required to update its Urban Water Management Plan (UWMP) to meet the California Department of Water Resources (DWR) requirements for a 2020 UWMP. The City's last UWMP was adopted in June 2016; and

WHEREAS, the Plan shall be periodically reviewed at least once every five years, and that the City shall make any amendments or changes to its plan which are indicated by the review; and

WHEREAS, the Plan must be adopted by July 1, 2021, after public review and hearing, and filed with the California Department of Water Resources within thirty days of adoption; and

WHEREAS, the City has therefore, prepared and circulated for public review a draft Urban Water Management Plan, and a properly noticed public hearing regarding said Plan was held by the City Council on June 1, 2020, and

WHEREAS, the City of Woodland will file said Plan with the California Department of Water Resources within 30 days of adoption;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF WOODLAND AS FOLLOWS:

Section 1. The 2020 Urban Water Management Plan is hereby adopted and ordered filed with the City Clerk; the City Manager is hereby authorized and directed to file the 2020 Urban Water Management Plan with the California Department of Water Resources within 30 days after this date;

Section 2. A copy of the UWMP is located at www.cityofwoodland.org and made a part of this Resolution.

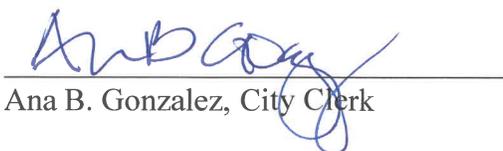
PASSED AND ADOPTED by the City Council of the City of Woodland at a regular meeting of the City Council held on the 1st day of June, 2021, by the following vote:

AYES: Members Fernandez, Garcia-Cadena, Lansburgh, Vega and Mayor Stallard
NOES: None
ABSENT: None
ABSTAIN: None



Tom Stallard, Mayor

ATTEST:



Ana B. Gonzalez, City Clerk

RESOLUTION NO. 7721

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF WOODLAND TO
ADOPT THE WATER SHORTAGE CONTINGENCY PLAN, CHAPTER 8 OF THE
2020 URBAN WATER MANAGEMENT PLAN**

WHEREAS, In accordance with the Urban Water Management Planning Act (California Water Code Section 10610 et seq.), the City of Woodland is required to update its Urban Water Management Plan (UWMP) to meet the California Department of Water Resources (DWR) requirements for a 2020 UWMP. The City's last UWMP was adopted in June 2016; and

WHEREAS, the California State Legislature enacted two policy bills, (Senate Bill (SB) 606 (Hertzberg) and Assembly Bill (AB) 1668 (Friedman)) (collectively referred to as the 2018 Water Conservation Legislation), to establish a new foundation for drought planning to adapt to climate change and the resulting longer and more intense droughts in California, which set new requirements for water shortage contingency planning; and

WHEREAS, the City has updated its Water Shortage Contingency Plan (WSCP) and modified WMC Chapter 13.32.040 to be consistent with the 2018 Water Conservation Legislation; and

WHEREAS, the City has therefore, prepared and circulated for public review a draft WSCP, and a properly noticed public hearing regarding said WSCP was held by the City Council on June 1, 2020, and

WHEREAS, modifications to the Water Shortage Contingency Plan (WSCP) may be made after adoption, but prior to submittal, to the State based upon feedback from City Council and the public at the public hearing; and

WHEREAS, the full UWMP will be adopted by City Council in a separate action.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF WOODLAND AS FOLLOWS:

Section 1. The Water Shortage Contingency Plan, Chapter 8 of the 2020 Urban Water Management Plan, is on file with the City and is hereby adopted and ordered filed with the City Clerk; and

Section 2. Copies of the UWMP and WSCP are located at www.cityofwoodland.org and made a part of this Resolution.

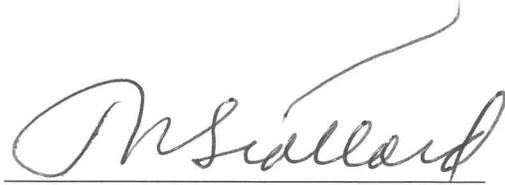
PASSED AND ADOPTED by the City Council of the City of Woodland at a regular meeting of the City Council held on the 1st day of June, 2021, by the following vote:

AYES: Members Fernandez, Garcia-Cadena, Lansburgh, Vega and Mayor Stallard

NOES: None

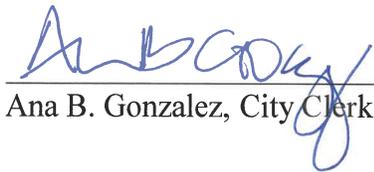
ABSENT: None

ABSTAIN: None



Tom Stallard, Mayor

ATTEST:



Ana B. Gonzalez, City Clerk

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