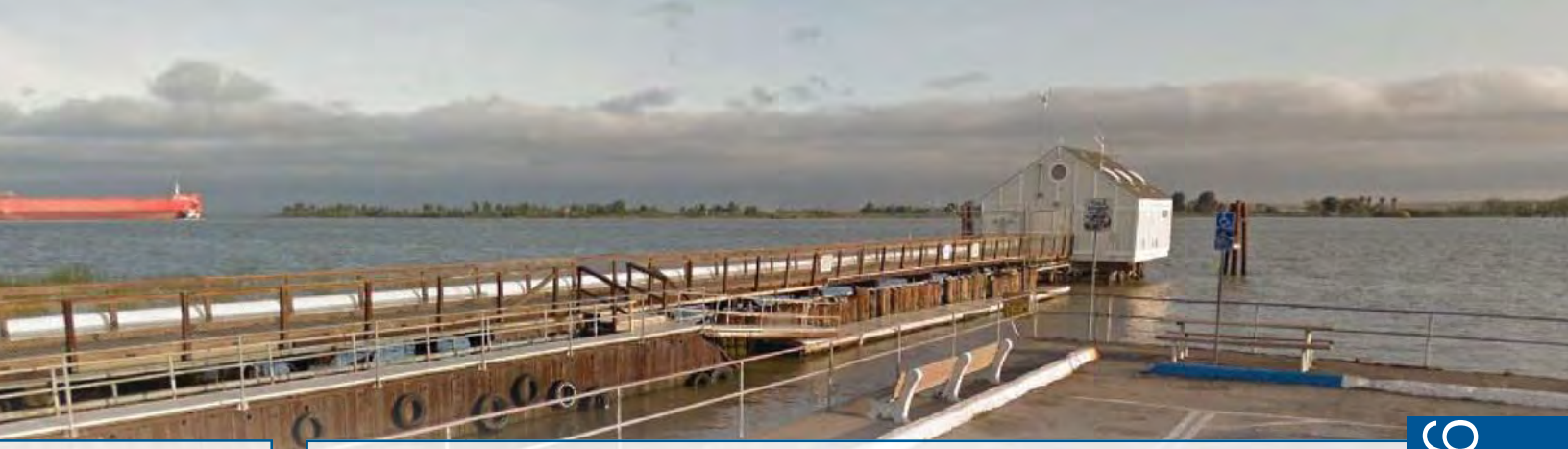

FINAL - MAY 2016

CITY OF ANTIOCH

2015 Urban Water Management Plan

WEST YOST ASSOCIATES

CITY OF ANTIOCH 1872 CALIFORNIA

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Final
2015 Urban Water Management Plan

Prepared for

City of Antioch

May 2016

WEST YOST ASSOCIATES
Consulting Engineers

622-12-15-03

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List of Acronyms

AB	Assembly Bill
AB 797	Assembly Bill 797
ABAG	Association of Bay Area Governments
Act	Urban Water Management Act
AF	Acre-Feet
AFY	Acre-Feet per Year
BARWC	Bay Area Recycled Water Coalition
Baseline GPCD	Baseline Gallons Per Capita Per Day
BDCP	Bay Delta Conservation Plan
BMP	Best Management Practice
BPS	Booster Pump Station
Bureau	United States Bureau of Reclamation
Canal	Contra Costa Canal
CBDA	California Bay-Delta Authority
CCAP	Community Climate Action Plan
CCWD	Contra Costa Water District
CDoF	California Department of Finance
CDPH	California Department of Public Health
CEQA	California Environmental Quality Act
CII	Commercial, Industrial, and Institutional
CIMIS	California Irrigation Management Information System
City	City of Antioch
CUWCC	California Urban Water Conservation Council
CWC	California Water Code
DD	Delta Diablo
Delta	Sacramento-San Joaquin Delta
DMMs	Demand Management Measures
DOF	Department of Finance
DSC	Delta Stewardship Council
DWR	Department of Water Resources
DWR Guidebook	2015 Urban Water Management Plans Guidebook for Urban Water Suppliers
ET	Evapotranspiration
ETo	Reference Evapotranspiration
GPCD	Gallons Per Capita Per Day
GPD	Gallons Per Day
GPM	Gallons Per Minute
HAAs	Haloacetic Acids
HCF	Hundred Cubic Feet

HET	High Efficiency Toilets
HUD	Housing and Urban Development
MEF	Modified Energy Factor
MF	Multi-Family
MFI	Median Family Income
MG	Million Gallons
mg/L	Milligrams Per Liter
MG/yr	Million Gallons Per Year
MGD	Million Gallons Per Day
MOU	Memorandum of Understanding
NAICS	North American Industry Classification System
NPDES	National Pollutant Discharge Elimination System
PRV	Pressure Reducing Valve
SB X7-1	Senate Bill X7-1
SB X7-7	Senate Bill Seven of the Senate's Seventh Extraordinary Session of 2009
SF	Single-Family
SWRCB	State Water Resources Control Board
TDH	Total Dynamic Head
TDS	Total Dissolved Solids
THMs	Trihalomethanes
ULFT	Ultra-Low Flow Toilet
UWMP	Urban Water Management Plan
WDR	Waste Discharge Requirements
WELO	Water Efficient Landscape Ordinance
West Yost	West Yost Associates
WF	Water Factor
WRWC	Western Recycled Water Coalition
WSCP	Water Shortage Contingency Plan
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

ES.1 INTRODUCTION

Over the last several years, Urban Water Management Plans (UWMPs) have assumed a very important role in water supply planning and management for communities in California. UWMPs have become the foundational documents which cities and water agencies use to develop water supply assessments and other key water supply reliability documents in support of providing water service to existing customers and future development in accordance with adopted General Plans and established Spheres of Influence.

With the current unprecedented water supply conditions in California, development of the 2015 UWMPs comes at a pivotal time. Current drought conditions have resulted in unprecedented State mandates for water conservation and have led to the passage of the Sustainable Groundwater Management Act of 2014. These actions will impact all water suppliers and all water users in the State. With the improving economy statewide, the need for reliable water supplies to serve existing customers, as well as new development, is more critical than ever. Also, 2015 is the first compliance year for the interim water use targets required by the Water Conservation Act of 2009 (SB X7-7).

As described in this 2015 UWMP, the City of Antioch's (City) residents and businesses have responded positively to the call for water conservation and the City continues to be committed to the implementation of good water management practices to ensure that adequate, reliable water supplies are available to meet existing and projected demands. The City has met its interim 2015 per capita water use target and is well positioned to meet the final 2020 water use target per capita water demand.

ES.2 WATER CODE REQUIREMENTS

The Urban Water Management Planning Act (UWMP Act) requires water suppliers that provide over 3,000 acre-feet per year (AFY) or have over 3,000 connections to prepare and submit to the State Department of Water Resources (DWR) an Urban Water Management Plan every 5 years.

The UWMP Act has been modified over the years in response to the State's water shortages, droughts and other factors. A significant amendment was made in 2009, after the 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 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 primary objective of the UWMP Act is to direct "urban water suppliers" to develop an 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.

In 2015, the City supplied approximately 4,500 million gallons (MG) of potable water to approximately 31,800 residential and non-residential connections located within its water service area. The City is therefore considered an urban water supplier and is required to submit an UWMP. This 2015 UWMP describes the City water system, historical and projected water use, water supply sources, and a comparison of projected water supply to water demands during

normal, single-dry, and multiple-dry years in five-year increments from 2020 to 2040. As required by SB X7-7, this 2015 UWMP also confirms the City's 2015 and 2020 water use targets, verifies the City's compliance with the interim 2015 water use target, and describes the City's implementation plan for meeting the City's final 2020 water use target.

The City's 2015 UWMP (or Plan) has been prepared in accordance with the UWMP Act, as defined by the California Water Code, Division 6, Part 2.6, Sections 10610 through 10656 (Urban Water Management Planning), and the Water Conservation Act of 2009 (WC Act, also known as SB X7-7), as defined by California Water Code, Division 6, Part 2.55, Section 10608 (Sustainable Water Use and Demand Reduction). A copy of the relevant sections of the Water Code are included in Appendix A of this document.

A brief summary of this 2015 UWMP's contents and the public review and adoption process is provided below, following a discussion of the legislative changes that have been enacted since the 2010 UWMPs were prepared and adopted.

ES.3 LEGISLATIVE CHANGES FROM 2010 UWMP

The legislative changes to the UWMP Act and their location in this 2015 UWMP are described in Chapter 1. Some highlighted changes include:

- Demand Management Measures: Address the nature and extent of each water demand management measure implemented over the past 5 years in narrative form.
- 2015 UWMP Submittal Date to DWR: Changed from December 31, 2015 to July 1, 2016.
- Water Loss: Requires water suppliers to quantify and report on distribution system water loss using the AWWA Water Audit methodology.
- Voluntary Reporting of Passive Savings due to new water codes and requirements.
- Voluntary Reporting of Energy Intensity: Describe the water/energy nexus.
- Defining Water Features: Water Shortage Contingency Plans must distinguish between water features that are artificially supplied with water (including ponds, lakes, waterfalls, and fountains) and swimming pools and spas.

ES.4 PLAN ORGANIZATION

This 2015 UWMP contains the appropriate sections and tables required per California Water Code Division 6, Part 2.6 (Urban Water Management Planning Act), included in Appendix A of this 2015 UWMP, and has been prepared based on guidance provided by the California Department of Water Resources (DWR) in their January 2016 "2015 Urban Water Management Plans, Guidebook for Urban Water Suppliers" (DWR 2015 Guidebook).

DWR's Urban Water Management Plan Checklist, as provided in the DWR 2015 Guidebook, has been completed to demonstrate the Plan's compliance with applicable requirements. A copy of the completed checklist is included in Appendix C.

This 2015 UWMP is organized into the following chapters:

- Chapter 1: Introduction and Overview
- Chapter 2: Plan Preparation
- Chapter 3: System Description
- Chapter 4: System Water Use
- Chapter 5: SB X7-7 Baselines and Targets
- Chapter 6: System Supplies
- Chapter 7: Water Supply Reliability
- Chapter 8: Water Shortage Contingency Planning
- Chapter 9: Demand Management Measures
- Chapter 10: Plan Adoption, Submittal and Implementation

Appendices (listed in Chapter 1) provide relevant supporting documents, including the 2015 UWMP tables and SB X7-7 Verification Form.

ES.5 PLAN REVIEW AND ADOPTION

The UWMP Act requires the water supplier to coordinate the preparation of its Plan with other appropriate agencies, 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 2015 UWMP. The coordination and outreach are described in Chapter 2.

A public hearing to discuss the Draft 2015 UWMP was held on May 24, 2016.

Public hearings provide an opportunity for all City water users and the general public to become familiar with the Plan and to ask questions about its water supply and the City's continuing plans for providing a reliable, safe, high-quality water supply. The adoption, implementation and economic impact of revised per capita water use targets (described in Chapter 5) was also discussed. Copies of the draft Plan were made available for public inspection at the City Clerk's office, and at the Antioch Library.

Water Code § 10621 (b) requires agencies to notify the cities and counties to which they serve water that the Plan is being updated and reviewed. This notification must be sent out at least 60 days in advance of the public hearing. In early 2016, 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 Plan update. The notifications to cities and counties, the public hearing notifications, and the public hearing and adoption are discussed in Chapter 10 and provided in Appendix D.

This Plan was adopted by the City Council on May 24, 2016. A copy of the adoption resolution is provided in Appendix J.

Within 30 days of Plan adoption, a copy of the Plan was submitted to DWR and the California State Library.

Within 30 days of submitting the adopted Plan to DWR, copies of this Plan will be made available during normal business hours at the following locations:

- Antioch Library (501 West 18th Street), and
- City Clerk's Office, City Hall (200 H Street).

A copy of the adopted Plan will also be available for review and download on the City's website: http://www.ci.antioch.com/.

Should this Plan be amended or changed, copies of amendments or changes to the Plan shall be submitted to DWR, the California State Library, and any city or county within which the City provides water supplies within 30 days after adoption of the amendment(s).

CHAPTER 1
Introduction and Overview

This chapter provides an introduction and overview of the City of Antioch's (City) 2015 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 2010 UWMP, and organization of the City's 2015 UWMP. This 2015 UWMP has been prepared jointly by City staff and West Yost Associates (West Yost).

1.1 INTRODUCTION

The Urban Water Management Planning Act (Act) was originally established by Assembly Bill 797 (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 an 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 10656 of the California Water Code (CWC), is provided in Appendix A of this document.

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. The City currently relies entirely on surface water supplies for potable water. The City utilizes recycled water purchased from Delta Diablo (DD) to irrigate four (4) parks and its municipal golf course. The City's primary source of surface water is withdrawn from the Sacramento-San Joaquin Rivers Delta through its own intake, or purchased from the Contra Costa Water District (CCWD), through the Contra Costa Canal and the Los Vaqueros Reservoir. With California entering its fourth year of drought, maximizing local water resources and minimizing imports has become extremely important. On May 12, 2015, the City passed new drought management measures and approved implementing Stage III of the City's Urban Water Management Plan. During Stage III of a water supply shortage, the State required 28 percent water reductions from 2013 monthly water usage. In addition to implementing its water conservation program, the City has an ongoing water main replacement program to reduce the potential for water system leaks. To continue to meet the water needs of the community, the City carefully manages its available water resources. The City's UWMP is a comprehensive guide for planning for a safe and adequate water supply.

1.3 CHANGES FROM THE 2010 UWMP

The Urban Water Management Planning 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 - 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.

There have been several additions and changes to the California Water Code since the City's 2010 UWMP was prepared. These changes, along with their location in this 2015 Plan, are summarized below:

- AB 2067 (Weber 2014)
  - CWC Section 10631 (f)(1) and (2): Demand Management Measures
    - Requires water suppliers to provide narratives describing their water demand management measures, as provided.
    - Requires retail water suppliers to address the nature and extent of each water demand management measure implemented over the past 5 years and describe the water demand management measures that the supplier plans to implement to achieve its water use targets.
    - See Chapter 9 of this 2015 UWMP for a description of the City's Demand Management Measures.
  - CWC Section 20621 (d): Submittal Date
    - Requires each urban water supplier to submit its 2015 plan to the Department of Water Resources by July 1, 2016.
- SB 1420 (Wolk 2014)
  - CWC Section 10644(a)(2): Submittal Format
    - Requires the plan, or amendments to the plan, to be submitted electronically to the department.
  - CWC Section 10644(a)(2): Standardized Forms
    - Requires the plan, or amendments to the plan, to include any standardized forms, tables, or displays specified by the department.
  - CWC 10631 (e)(1)(J) and (e)(3)(A) and (B): Water Loss
    - Requires a plan to quantify and report on distribution system water loss.
    - See Chapter 4 of this 2015 UWMP for a description of the City's distribution system water losses.
  - CWC 10631 (e)(4): Voluntary Reporting of Passive Savings
    - Provides for water use projections to display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans, when that information is available and applicable to an urban water supplier.
    - The City has decided to not report on passive water savings.
- SB 1036 (Pavley 2014)
  - CWC 10631.2 (a) and (b): Voluntary Reporting of Energy Intensity
    - Provides for an urban water supplier to include certain energy-related information, including, but not limited to, an estimate of the amount of the energy used to extract or divert water supplies.
    - The City has opted to not report on energy intensity in this 2015 UWMP.

- CWC 10632: Defining Water Features
  - Commencing with the UWMP update due July 1, 2016, for purposes of developing the water shortage contingency analysis, requires urban water suppliers to analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.
  - See Chapter 8 of this 2015 UWMP for a discussion of the City's Water Shortage Contingency Plan.

1.4 PLAN ORGANIZATION

This 2015 UWMP contains the appropriate sections and tables required per California Water Code Division 6, Part 2.6 (Urban Water Management Planning Act), included in Appendix A of this 2015 UWMP, and has been prepared based on guidance provided by the California Department of Water Resources (DWR) in their November 2015 "Guidebook to Assist Urban Water Suppliers to Prepare a 2015 Urban Water Management Plan" (DWR Guidebook).

This 2015 UWMP is organized into the following chapters:

- Chapter 1: Introduction and Overview
- Chapter 2: Plan Preparation
- Chapter 3: System Description
- Chapter 4: System Water Use
- Chapter 5: Baselines and Targets
- Chapter 6: System Supplies
- Chapter 7: Water Supply Reliability
- Chapter 8: Water Shortage Contingency Planning
- Chapter 9: Demand Management Measures
- Chapter 10: Plan Adoption, Submittal and Implementation

This 2015 UWMP also contains the following appendices of supplemental information and data related to the City's 2015 UWMP:

- Appendix A: Legislative Requirements
- Appendix B: DWR Recommended 2015 UWMP Tables
- Appendix C: DWR 2015 UWMP Checklist
- Appendix D: Required Notices
- Appendix E AWWA Water Audit
- Appendix F: DWR Recommended - SB X7-7 Tables
- Appendix G: CCWD Supply Reliability Information
- Appendix H: Water Conservation Ordinances
- Appendix I: CUWCC BMP Reporting and Water Conservation Materials
- Appendix J: UWMP Adoption Resolution
- Appendix K: Regional Alliance Documentation

Furthermore, this 2015 UWMP contains all of 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.

This chapter describes the preparation of the City's 2015 UWMP, 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 Urban Water Management Planning 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 (AF) of water annually.

As shown in Table 2-1, in 2015, the City provided water supplies to 31,798 customers (connections), and supplied 4,521 MG of potable and raw water. Therefore, the City is required to prepare an UWMP. The City's previous UWMP, the 2010 UWMP, was adopted by the City Council in June 2011.

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

Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
CA0710001	City of Antioch	31,798	4,521
	TOTAL	31,798	4,521
NOTES: Volumes are in million gallons (MG) and includes only potable and raw water.			

2.2 REGIONAL PLANNING

As described in Section 2.3 below, the City has prepared this 2015 UWMP on an individual reporting basis, not a part of a regional planning process. However, the City is included in a regional SB7 alliance under its wholesaler, CCWD. CCWD, and the City's recycled water provider, Delta Diablo (DD), have assisted the City in the preparation of this Plan.

2.3 INDIVIDUAL OR REGIONAL PLANNING AND COMPLIANCE

This 2015 UWMP has been prepared on an Individual Reporting basis, covering only the City's service area (see Table 2-2). As noted in Table 2-2, the City is also a member of the Contra Costa Water District Alliance. CCWD will include the Regional Alliance Report and Verification Forms in its 2015 UWMP. A letter documenting the Regional Alliance is included in Appendix K. As described below in Section 2.4, the City has notified and coordinated with appropriate regional agencies and constituents, including CCWD, DD, as well as several local agencies.

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

Select Only One	Type of Plan		Name of RUWMP or Regional Alliance *if applicable*
☑	**Individual UWMP**		
	☐	Water Supplier is also a member of a RUWMP	
	☑	Water Supplier is also a member of a Regional Alliance	Contra Costa Water District Alliance
☐	**Regional Urban Water Management Plan (RUWMP)**		
NOTES: City is submitting an individual UWMP and is meeting all SB X7-7 requirements on an individual basis. City is also participating in the Contra Costa Water District Regional Alliance. The Regional Alliance Report and verification forms have been submitted by CCWD on behalf of the Regional Alliance member agencies. Additionally, a letter dated June 8, 2011 (Appendix K) was submitted to DWR providing the list of water suppliers forming the Regional Alliance.			

2.4 FISCAL OR CALENDAR YEAR AND UNITS OF MEASURE

The City is a water retailer.

The City's 2015 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 2015 has been included.

The City's reporting of water volumes in this 2015 UWMP is reported in million gallons (MG).

Table 2-3 summarizes the City's reporting methods for this 2015 UWMP.

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

Type of Agency (select one or both)	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year	
☑	UWMP Tables Are in Calendar Years
☐	UWMP Tables Are in Fiscal Years
Units of Measure Used in UWMP	
Unit	MG

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 Plan 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. The City coordinated the preparation of its Plan with the CCWD and DD. These and other neighboring water agencies, as well as the public, participated in the coordination and preparation of this 2015 UWMP, and are summarized below.

2.5.1 Wholesale and Retail Coordination

Water Code § 10631

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

The City is one of twelve cities in central and eastern Contra Costa County that are contract customers to CCWD for the wholesale purchase of water. The City has and continues to participate with CCWD to implement water conservation measures as a part of CCWD's wholesaler water conservation program. In accordance with CWC 10631, the City has informed CCWD of projected water use from that source for the period 2020-2040, as shown in Table 2-4.

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

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

2.5.2 Coordination with Other Agencies and the Community

The City coordinated its UWMP preparation with other local agencies and the community.

2.5.2.1 Coordination with Other Agencies

Water Code § 10620 (d)(2)

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

The City coordinated the preparation of this Plan with several agencies including relevant public agencies that also utilize CCWD water and DD (wastewater utility). These and other agencies, as well as the public, participated in the coordination and preparation of this 2015 UWMP. In addition, the City coordinated the preparation of the water demand projections in this Plan with the 2035 City of Antioch Housing Element.

2.5.2.2 Coordination with the Community

Water Code §10642

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

The City has encouraged active involvement from the community through the City's website, bill inserts, and notice of public hearing. The City's website describes on-going projects and posts announcements of planned rate increases to fund these water projects.

As part of development of this 2015 UWMP update, the City provided a public review period following noticing and prior to adoption to allow ample time for public comments to be developed and received. Public noticing, pursuant to Section 6066 of the Government Code, was conducted prior to commencement of the public comment period. Public hearing notices are included in Appendix D of this document. During the public comment period, the Draft UWMP update was made available at the City Clerk's Office and the Antioch library, as well as on the City's website.

The organizations that were notified and solicited for input in Plan preparation are listed in Table 2-5.

Table 2-5. Coordination and Notification for Plan Preparation

Organization/Agency Name	Level of Participation				
	Participated in developing the plan	Commented on the draft	Attended public meetings	Was contacted for assistance	Was sent a copy of the draft plan
Contra Costa Water District	x			x	x
Delta Diablo	x			x	x
Relevant public agencies	x	x	x	x	x
General public	x	x	x		x

2.5.3 Notice to Cities and Counties

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

Water Code § 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. In early 2016, 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 Plan update. The notifications to cities and counties, the public hearing notifications, and the public hearing and adoption are discussed in Chapter 10. Copies of the published Notice of Preparation is included in Appendix D.

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

3.1 GENERAL DESCRIPTION

The City of Antioch water system serves 31,798 customers (connections) within Contra Costa County (as of 2015). The system is responsible for delivering treated water to residential, commercial, and irrigation customers.

The City's principal sources of raw surface water are the Sacramento-San Joaquin Rivers Delta and the Contra Costa Canal (Canal), which can be stored in the Antioch Municipal Reservoir. Canal water, purchased from CCWD is pumped from the Victoria Canal, Rock Slough and Old River in the western Delta and stored in the Los Vaqueros Reservoir. The pipelines from the Contra Costa Canal to the water treatment plant (WTP) have a capacity over 60 million gallons per day (MGD), well above the maximum predicted future water demand. Water from the Canal can be pumped into the City municipal reservoir or directly to the WTP. The WTP has a maximum capacity of about 38 MGD. Treated water flows into two 1.0 MG clearwells before entering the distribution system.

3.2 SERVICE AREA

The City is located along the Sacramento-San Joaquin Rivers Delta in the east bay region of the San Francisco Bay Area. The existing service area covers 28.8 square miles and includes the area within the City limits and some adjacent land to the northeast and west. The City's service area extends from steep hilly terrain in the south and west portions of the service area to flat with a gentle slope in the northeast portion of the service area. The City's water system serves elevations from near sea level up to about 500 feet.

The City's predominant land use is residential communities, with small areas of commercial and industrial land use. Marginal agricultural lands in the southern portion of the service area are anticipated to be converted to residential or commercial use by the year 2030.

The City's water service area, pressure zone boundaries, and distribution system facilities are shown in Figure 3-1. Figure 3-2 presents a hydraulic schematic diagram of the City's existing water system.

A description of the six primary pressure zones, updated to match the 2014 Water System Master Plan Update, is provided below.

3.2.1 Zone I

The Pressure Zone I distribution system serves the older residential sections of the City, the original central business district, and some major industrial users. Ground elevations range from sea level to 50 feet. Zone I has a static hydraulic grade of 133.5 feet. The principal water feed to Zone I is a 24-inch diameter gravity main from the Clearwells A and B. The City has not used the Zone I Booster Pump Station (BPS) since the 1970s. The Zone I BPS is out of service

because the high demands from the food processing industry have disappeared, the City also had transferred some Zone I demands to Zone II (e.g., east along Wilbur Avenue), and the City has four pressure-regulating valves (PRVs) to support Zone I from Zone II. These PRVs are located on 4th Street near the Public Works Maintenance Center, on L Street north of Sycamore, on East 13th Street east of Cavallo (from Zone IIC) and East 18th Street near Terrace Drive (from Zone IIA). The City has several older emergency interconnections that could be activated in an emergency or in the event that the Zone I 24-inch diameter main is out of service and the PRVs cannot supply sufficient water.

Zone I has one 1.0 MG reservoir, "D" Street Reservoir, located on the 24-inch diameter main, to sustain adequate pressures during periods of high demand and to hold fire flow and emergency reserves. For planning purposes, the City also assumes that 1.0 M of 2.0 MG in Clearwells A and B is available to support Zone I.

The Zone I development is served by 4-, 6-, 8-, 10-, 12- and 24-inch diameter mains. In this older area of the City, there are many 4 and 6 inch diameter mains. City Water Distribution staff has reported that the 4 and 6 inch diameter mains are especially affected by tuberculation and, to some extent, external corrosion. During the past three decades, the City has initiated a program to replace such corroded or undersized pipes.

3.2.2 Zone II

Pressure Zone II serves primarily residential and commercial users and has ground elevations ranging from sea level to 170 feet. It also serves some industrial users along the eastern end of Wilbur Avenue. Zone II has a static hydraulic grade line of 256 feet.

The system is supplied by two Zone II BPS—one built in 1967 and one built in 1988—which take suction from the WTP Clearwells A and B. The older BPS (Zone II BPS A) contains four vertical turbine pumps, each rated at 2,400 gallons per minute (GPM) at 125 feet total dynamic head (TDH). The 1988 BPS (Zone II BPS B) now includes four pumps each rated at 4,800 GPM at 125 feet TDH, and a fifth pump rated at 2,400 GPM at 125 feet TDH. Another pump rated at 800 GPM at 125 feet THD is located directly over the Clearwell A. The total firm Zone II BPS capacity (assuming the largest pump in either BPS is out of service) is about 39.2 MGD. The WTP has two standby generators capacity available to operate three smaller and three larger Zone II booster pumps should a power outage occur (about 31 MGD capacity), with space for an additional emergency generator to support ultimate firm capacity.

Zone II has four water storage reservoirs. A 3.0 MG reservoir with an overflow elevation of 256 feet and 0.5 MG reservoir with an overflow elevation of 264 feet are located across Lone Tree Way from the WTP and on the WTP site, respectively. Two altitude valves prevent flow into the larger reservoir when the grade line exceeds an elevation of 256 feet. Donlon Reservoir in the west and the Larkspur Reservoir in the east are 2.0 MG reservoirs with overflows at an elevation of 248 feet. The City has reserved space available adjacent to the Larkspur Reservoir for a second reservoir of at least 2.0 MG.

Zone II also supplies one isolated area above 170 feet in elevation through the small Sunset BPS. This station contains no standby power equipment and is generally difficult to access and maintain since it is located in a below-grade vault. This station is schedule to be replaced in the summer of 2016. About 4,000 feet of street separate this area from Zone III East.

The Zone II development is served by 6-, 8-, 10-, 12- and 16-inch diameter mains.

3.2.3 Zone III East

Pressure Zone III East encompasses much of the newer residential and commercial growth in the City. Zone III East generally extends south from the canal, with some development north of the canal in the eastern portion of the City. It is bounded on the west by Contra Loma Regional Park and on the east by a Southern Pacific Railroad right-of-way. The zone border extends south to the city limits generally extending to about Sand Creek in its southeast area. Zone III East has a static hydraulic grade line of 340 feet.

Three BPSs, Hillcrest, Lone Tree No. 1 and Lone Tree No. 2, and two reservoirs, Hillcrest and Lone Tree, serve Zone III East. Hillcrest BPS contains three pumps, each rated at 1,500 GPM at 94 feet of TDH. Its firm capacity is currently about 4.0 MGD. There is space for a fourth matching pump, with a future firm capacity of up to 6.0 MGD. The Lone Tree No. 1 BPS has three 1,800 GPM pumps with a firm capacity of 5.2 MGD, supported with standby power facilities. The BPS has space for a fourth pump to increase the firm capacity to 7.8 MGD. The Lone Tree No. 2 BPS has three 3,600 GPM pumps with a firm capacity of 10.4 MGD, supported with standby power facilities. Both Hillcrest and Lone Tree Reservoirs have 2.5 MG capacity with an overflow elevation of 340 feet.

The Zone III East development is served by 6-, 8-, 10-, 12-, 16-, 20- and 24-inch diameter mains.

3.2.4 Zone III West

Zone III West is a developed residential area on the west side of the City. Most existing development is residential. After completion of the planned developments at Black Diamond Ranch, this zone will encompass about one square mile. It is bound by the Canal, Black Diamond Mines Regional Park, Contra Loma Regional Park, and the City limits. Donlon BPS serves Zone III West; the BPS fills the Cambridge Reservoir. Zone III West has a static hydraulic grade line of 355 feet when the Cambridge Reservoir is operated full.

Donlon BPS has two 1,200- GPM pumps and one 600- GPM pump, with space to add one additional 1,200 GPM pump. The current firm capacity of the BPS is 2.6 MGD, supported with standby power facilities. When the fourth pump is added, firm capacity will increase to 4.3 MGD. This BPS fills Cambridge Reservoir, which has a 2.5 MG capacity and an overflow at elevation 355 feet. City staff currently operates the Cambridge Reservoir with a maximum water surface elevation about 10 feet below its overflow.

The Zone III West development is served by 6-, 8-, 10-, 12- and 26-inch diameter mains.

3.2.5 Zone IV East

Zone IV East includes all of Higgins Ranch and parts of Dallas Ranch, Black Diamond Knolls, and Diablo West developments. Zone IV East is bound by Contra Loma Regional Park on the west, Zone III East on the north and east, and the Urban Limit Line on the south. The Dallas Ranch BPS serves Zone IV East. Zone IV East has a static hydraulic grade line of 510 feet. It includes four 1,400 GPM pumps (a firm capacity of about 6.0 MGD) and is supported with standby power facilities. The BPS conveys water to Zone IV East and to the Empire Mine Reservoir. The reservoir has a capacity of 3.5 MG and an overflow elevation of 510 feet. The Zone IV East development is served by 6-, 8-, 10-, 12- and 16-inch diameter mains.

3.2.6 Zone IV West

The Zone IV West facilities serve the higher elevations of the Mira Vista Hills Subdivision and the higher elevations in Black Diamond Ranch. Zone IV West has a static hydraulic grade line of 455 feet. The Cambridge BPS serves Zone IV West. It has standby power facilities to convey about 0.5 MGD into Zone IV West and the Mira Vista Hills Reservoir. The Cambridge BPS has two pumps producing about 250 GPM each with a firm capacity of about 0.36 MGD. In mid-2014, the City added two pumps (each rated at about 1,000 GPM) to the Cambridge BPS to increase its firm capacity to about 1.4 MGD. In the future, Zone IV West is expected to be used to convey water to the south to the proposed higher-elevation Sierra Vista Development. The Zone IV West is served by 6-, 8-, 10-, 12- and 16-inch diameter mains.

3.3 SERVICE AREA CLIMATE

The City experiences cool and humid winters, and hot and dry summers. Temperatures are semi-arid with the summer highs in the mid 80's and the winter lows in the mid 40's. Average rainfall in Antioch is 13.2 inches per year. The high temperature and low humidity that usually occur in the summer months results in high water demands. Landscape irrigation requirements in the summer is a major contributor to the high summer water demands.

Water use within the City's service area is dependent on various climate factors such as temperature, precipitation, and evapotranspiration (ET). Climate data, including temperature and precipitation estimates, were obtained from the Western Regional Climate Center for Antioch, California. The period of record was March 1, 1955 to December 31, 2014.

ET describes the combined water lost through evaporation from the soil and surface-water bodies and plant transpiration. In general, the reference evapotranspiration (ET_o) is given for turf grass, and then corrected for a specific crop type. Local ET_o data was obtained from the California Irrigation Management Information System (CIMIS) monitoring station in Brentwood (Station #47), which is located just east of the City's service area.

The historical climate characteristics affecting water management in the City's service area is shown in Table 3-1.

Table 3-1. Monthly Average Climate Data Summary

Month	Standard Monthly Average ETo, inches[a]	Average Total Rainfall, inches[b]	Average Temperature, degrees Fahrenheit[b]	
			Max	Min
January	1.17	2.78	54.0	37.1
February	1.98	2.43	60.3	41.0
March	3.74	2.00	65.5	43.4
April	5.47	0.90	71.6	46.4
May	7.14	0.36	78.6	51.4
June	7.97	0.90	86.1	56.3
July	8.22	0.02	91.1	57.6
August	7.39	0.04	89.9	56.9
September	5.57	0.18	86.3	55.3
October	3.77	0.64	77.4	50.3
November	1.89	1.58	64.4	43.1
December	1.12	2.20	54.9	37.4
Totals	55.43	13.22	73.3	48.0

[a] Source: California Irrigation Management Information System (CIMIS) data for Station #47: Brentwood (downloaded January 5, 2015)
[b] Source: Western Regional Climate Center (www.wrcc.dri.edu) data for Antioch, California (period of record: March 1, 1955 to December 31, 2014)

3.4 SERVICE AREA POPULATION AND DEMOGRAPHICS

As described above, the City provides water service to the area within the City limits and some adjacent land to the northeast and west. The City's current (2015) service area population of 108,298 has been estimated using data from the California Department of Finance (DOF) because more than 95 percent of the City's service area is contained within City limits.

Growth and development within the City's service area are subject to City growth management policies. Projections of future population within the City's service area are based on the City's 2015-2023 Housing Element.

The City's current and projected service area population is shown in Table 3-2.

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

Population Served	2015	2020	2025	2030	2035	2040*(opt)*
	108,298	108,900	112,400	116,200	120,300	124,600
NOTES: 2015 Population from Department of Finance. Projected data from City's Housing Element (2015-2023).						

Future industrial development will likely occur in Zones I and III along the major transportation routes. The remainder of the service area is likely to develop into residential and commercial uses. Residential water requirements vary on a per-acre basis, depending on the density of dwelling units and the number of persons per dwelling unit. Based on data from the California Department of Finance, the average number of people per household is approximately 3.0.

The City expects the number of employees and residents within the City's service area to continue to increase over the next 20 years. From 2000 to 2010, the City population increased 13 percent, which is a growth rate of approximately 1.3 percent per year. From 2010 to 2015, the City population increased 6 percent (growth rate of approximately 1.2 percent per year). According to the City's 2015-2023 Housing Element, the City's population is expected to increase by 15 percent from 2015 to 2040, which is approximately 0.66 percent per year. Employment growth within the City is expected to be higher, increasing by 23 percent between 2015 and 2040, which equates to an annual employment growth rate of 0.93 percent per year.

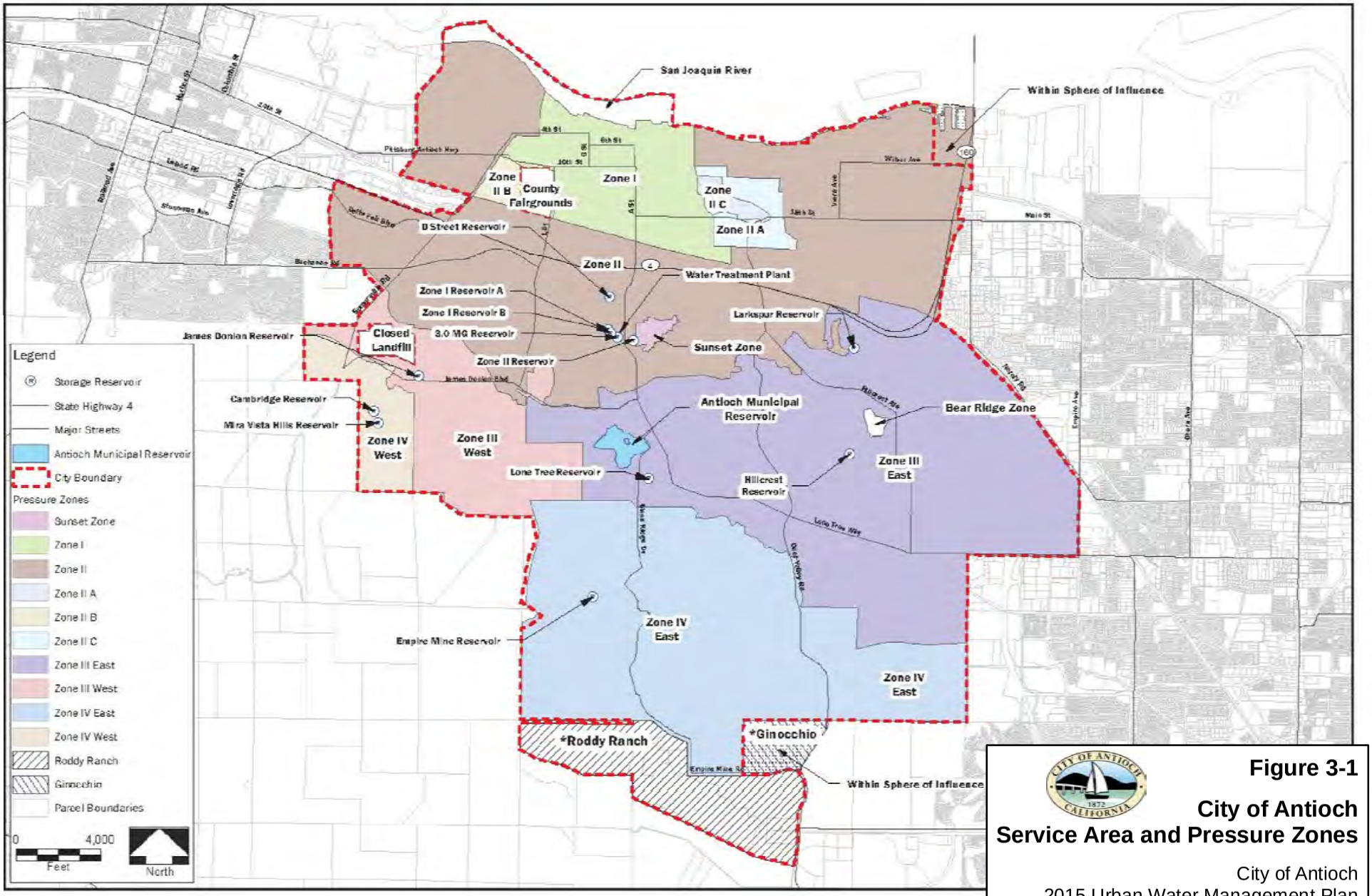
3.4.1 Demographic Factors

Sustained employment growth in certain portions of the Bay Area without the development of corresponding housing has caused rapid residential growth in eastern Contra Costa County over the last 30 years. The City serves a highly desirable area due its close proximity to major employment centers in San Francisco and Alameda County. The *City of Antioch General Plan (2003)* is a document regarding how future developments and management of community resources will be carried out over the next 25 years. Land use planning within the City is guided by the City's General Plan.

As a part of growth management, the City's General Plan defines performance standards for public services and facilities and the rate of residential growth within the City. The premise of growth management in the City's General Plan is to ensure that new developments make a positive contribution to the community.

The Housing Element is an element of the General Plan that delineates the specific programs that the City will implement to ensure housing opportunities for all economic segments of the economy. Unlike the General Plan, the Housing Element includes a comprehensive assessment of current and projected housing needs and is required to update every five years. According the *City of Antioch Housing Element (2015)*, the "young adult", "retirement", "senior citizen" age groups are estimated to be 11.2, 10.9, and 7.5 percent of the City's total population, respectively.

An Overcrowded Housing Unit is defined by the U.S. Census Bureau as a housing unit occupied by more than one person per room (excluding bathrooms, kitchen, hallway and closet space). Overcrowding can affect public facilities and services, reduce the quality of the physical environment and create conditions that contribute to deterioration. In 2000, 2,108 households in Antioch were overcrowded, accounting for 7.2 percent of all households. Of these households, 822 were owner-occupied and 1,286 were renter-occupied.



Source: City of Antioch Water System Master Plan Update, Brown and Caldwell (2014)

Figure 3-1

City of Antioch Service Area and Pressure Zones

City of Antioch
2015 Urban Water Management Plan

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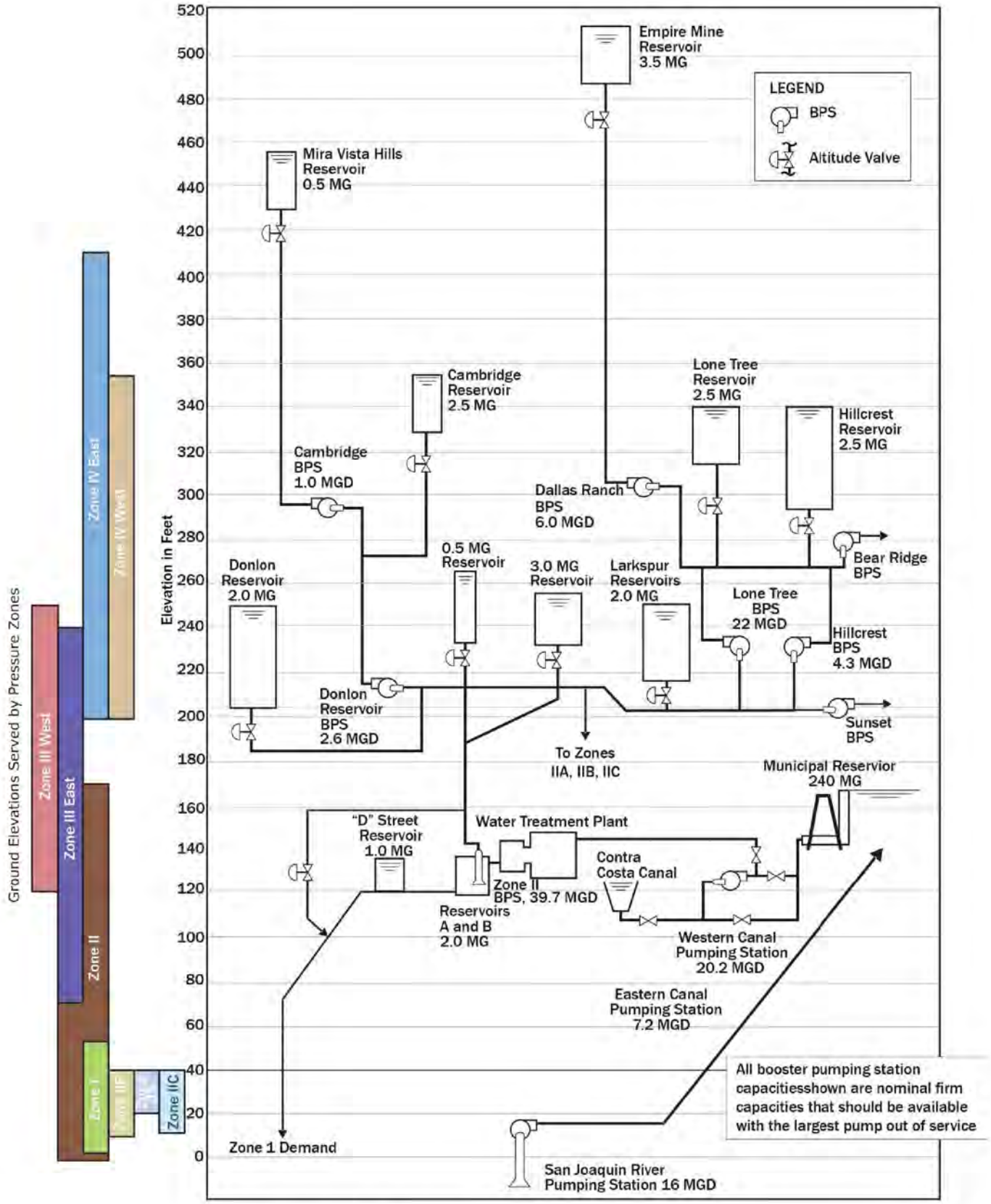

Source: City of Antioch Water System Master Plan Update, Brown and Caldwell (2014)

Figure 3-2

Existing Water System Schematic

City of Antioch
2015 Urban Water Management Plan

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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 Association of Bay Area Governments (ABAG) projected population according to the City's 2015-2023 Housing Element. Accurately tracking and reporting current water demands allows the City to properly analyze the use of their resources and conduct good resource planning.

4.1 RECYCLED VERSUS POTABLE AND RAW WATER DEMAND

Recycled water is wastewater that has been treated to a specified quality to enable it to be used again. As discussed in Chapter 6, the City receives recycled water from DD. Approximately 42 percent of the wastewater from DD is treated to recycled water for various landscaping, agricultural and industrial uses for the Cities of Antioch and Pittsburg.

Potable water is water that is safe to drink and which typically has had various levels of treatment and disinfection.

Raw water is untreated water that is used in its natural state or with minimal treatment. In 2015, the City used 29.21 MG of raw water for irrigation at the municipal golf course.

Because recycled water demand is highly dependent on its level of treatment, recycled water demand is more selective than potable or raw water demand.

4.2 WATER USES BY SECTOR

This section describes the City's past, current and projected water use by sector through the year 2040 in five-year increments. Water demand projections are based on the selected SB X7-7 water use targets combined with the ABAG 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, landscape irrigation, agricultural, and others. 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 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 (CWC 10608.12 (d)).
- **Industrial:** A water user that is primarily a manufacturer or processor of materials as defined by the North American Industry Classification System (NAICS) code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development (CWC 10608.12 (h)).

- **Institutional (and governmental):** A water user dedicated to public service. This type of user includes, among other users, higher education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions (CWC 10608.12 (i)).
- **Landscape:** Water connections supplying water solely for landscape irrigation. Such landscapes may be associated with multi-family, commercial, industrial, or institutional/governmental sites, but are considered a separate water use sector if the connection is solely for landscape irrigation.
- **Agricultural:** Water used for commercial agricultural irrigation.
- **Other:** Any other water demand that is not adequately described by the water sectors defined above. Unlike previous UWMPs, system water losses are not to be reported in the "Other" category.

The City's past water use among water use sectors are reported in Table 4-1.

Table 4-1. Historical Water Use by Customer Type, MG/yr

Water Use Type	2005 Actual Volume	2010 Actual Volume
Single Family	4,932	3,670
Multi-Family	475	406
Commercial	453	422
Industrial	313	240
Institutional/ Governmental	0	0
Landscape	333	610
Agricultural	0	0
Other	47	186
Potable System Losses	203	171
Raw Water	122	109
Subtotal	6,878	5,814
Recycled Water	0	0
Total	6,878	5,814

The City's actual water demands by water use for the year 2015 is reported in Table 4-2. There are no existing or projected water uses for saline barriers, groundwater recharge, or conjunctive use within the City.

Table 4-2. Retail: Demands for Potable and Raw Water – Actual (DWR Table 4-1)

Use Type	2015 Actual		
	Additional Description	Level of Treatment When Delivered	Volume
Single Family		Drinking Water	2,768
Multi-Family		Drinking Water	405
Commercial		Drinking Water	300
Industrial		Drinking Water	85
Institutional/Governmental		Drinking Water	178
Landscape		Drinking Water	465
Other	firelines and hydrant meters	Drinking Water	12
Other	unbilled unmetered	Drinking Water	57
Losses	potable system losses	Drinking Water	222
Landscape		Raw Water	29
		TOTAL	4,521
NOTES: Volumes are in MG; unbilled unmetered is estimated to be 1.25 percent of total suppy per AWWA Water Audit assumptions.			

Water demand projections in this report are based on population and employment projections and the SB X7-7 targets for the City. The population projections documented in Section 3.4 were based on ABAG 2013 projections for the City's sphere of influence. The ABAG projections were documented in the City's 2015-2023 Housing Element. The water use projections for 2020 through 2040 assume that the City will achieve its 2020 water use target (165 gallons per capita per day (GPCD)). The projected water demands through the year 2040 are reported in Table 4-3. Projected water uses by use type are based on 2015 percentage of total supply.

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

Use Type	Additional Description	Projected Water Use *Report To the Extent that Records are Available*				
		2020	2025	2030	2035	2040-opt
Single Family		4,051	4,181	4,323	4,477	4,637
Multi-Family		593	612	633	655	679
Commercial		440	454	469	486	503
Industrial		125	129	133	138	143
Institutional/Governmental		260	269	278	287	298
Landscape		681	703	727	753	780
Other	firelines and hydrant meters	18	18	19	20	20
Losses	potable system losses	362	374	387	400	415
Landscape	raw water for Lone Tree Golf Course	29	29	29	29	29
	TOTAL	6,559	6,769	6,998	7,245	7,504
NOTES: Volumes are in MG.						

The actual and projected water demands reported in Tables 4-2 and 4-3, and the recycled water demands reported in Table 6-4 are summarized in Table 4-4.

Table 4-4. Retail: Total Water Demands (DWR Table 4-3)

	2015	2020	2025	2030	2035	2040 *(opt)*
Potable and Raw Water *From Tables 4-1 and 4-2*	4,521	6,559	6,769	6,998	7,245	7,504
Recycled Water Demand* *From Table 6-4*	79	326	489	489	489	489
TOTAL WATER DEMAND	4,600	6,885	7,258	7,487	7,734	7,993
**Recycled water demand fields will be blank until Table 6-4 is complete.*						
NOTES: Volumes are in MG; Table references refer to DWR table numbers.						

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 sweeping. The average unaccounted-for water comprised about 2.5 percent of the total water produced in 2015. This percentage is very low compared to other California utilities. This lower percentage may be partly due to water meter addition for parks, medians, and school sites, regular meter maintenance, stringent construction standards applied to new facilities, replacement of deteriorated older pipes, and the relatively large portion of the system served by more modern facilities. The City's maintenance staff also actively pursues and corrects leaks. The year-to-year differences including a negative value in 2008 rate may, however, be due in part to a difference in time periods between production data and meter readings. The City measures water production daily, and total water use is measured in arrears. For example, water produced in December is billed as consumption in January. The DWR Water Audit Method (Appendix E) has been used to help quantify and track water losses associated with water distribution systems and identify areas for improved efficiency and cost recovery.

Table 4-5 summarizes the monthly system losses as the difference between the annual production (including both treated and untreated water supplies) and annual sales for the most recent 12 month period available. The most recent 12 month period began on July 1, 2014.

Table 4-5. Retail: 12 Month Water Loss Audit Reporting (DWR Table 4-4)

Reporting Period Start Date	Volume of Water Loss
07/2014	125
NOTES: Volumes are in MG.	

4.4 ESTIMATING FUTURE WATER SAVINGS

Water savings from codes, standards, ordinances, or transportation and land use plans (passive savings) can decrease the water use for new and future customers. The impact of the new water codes, etc., is reflected in the 2020 per capita water demand target. The City has not independently calculated the impact of recent codes, standards, ordinances, or transportation and land use plans.

Table 4-6 indicates that passive water saving estimates are not included in water demand projections.

Table 4-6 Retail Only: Inclusion in Water Use Projections (DWR Table 4-5)

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

4.5 WATER USE FOR LOWER INCOME HOUSEHOLDS

A lower income household has an income below 80 percent of an area median income, adjusted for family size. Projected water demands for low-income single-family and multi-family residential water uses are included in the total water demands described in this section. The City's 2015-2023 Housing Element estimates the income ranges for each income category based on the 2014 Housing and Urban Development (HUD) median family income (MFI) for Contra Costa County and the estimated number of Antioch households that fall in each category. These results indicate that approximately 53.6 percent of the City's households are Low Income (19.7 percent), Very-Low Income (14.5 percent), or Extremely-Low Income (19.4 percent).

Table 4-7 summarizes the water demand projections related to low-income developments. The estimated percent of the City's low income households or the City's amount of low income water demands are assumed to remain constant in future projections.

Table 4-7. Projected Water Demand for Low Income Households

Water Use Sector	Projected Low Income Household Water Demand, MG				
	2020	2025	2030	2035	2040
Single Family	2,171	2,241	2,317	2,399	2,486
Multi-Family	318	328	339	351	364
Total	2,489	2,569	2,656	2,751	2,849
Note: Assumes lower income demands are approximately 53.6 percent of total residential water demands.					

4.6 CLIMATE CHANGE

According to the San Francisco Bay Hydrologic Region California Water Plan Update (2013), climate change is already affecting the San Francisco Bay Area and may have significant impacts on water and other resources in its future. Moreover, there is evidence that a warming trend that occurred during the latter part of the 20th century will likely continue through the 21st century. These changes may have a direct effect on water resources in California. Numerous studies have been conducted in an attempt to determine the potential impacts to water resources.

Based on these studies, climate change could result in the following types of water resource impacts, including impacts on the watersheds in the Bay Area:

- Reductions in the average annual snowpack due to a rise in the snowline and a shallower snowpack in the low and medium elevation zones, such as in the Tuolumne River basin, and a shift in snowmelt runoff to earlier in the year;
- Changes in the timing, intensity and variability of precipitation, and an increased amount of precipitation falling as rain instead of as snow;
- Long-term changes in watershed vegetation and increased incidence of wildfires that could affect water quality;
- Sea level rise and an increase in saltwater intrusion;
- Increased water temperatures with accompanying potential adverse effects on some fisheries and water quality;
- Increases in evaporation and concomitant increased irrigation need; and
- Changes in urban and agricultural water demand.

In order to mitigate reduced water supplies caused by climate change, the City has adopted a Community Climate Action Plan (CCAP) (2011) for addressing GHG reduction strategies. The Antioch CCAP includes strategies focused on green building, renewable energy, transportation and land use, education, and waste management. As a part of the Antioch CCAP Strategy Summary, the City has adopted a water conservation ordinance which assumes a 20 percent reduction in household water use.

The City's water demand may be impacted by climate change. Increasing temperatures and decreased precipitation could increase landscape irrigation and agricultural demands. In addition, wildfire frequency may increase as a result of climate change which would increase the fire industry's water demands. Increasing the use of recycled water for these demands could mitigate the effects of climate change on water demand.

CHAPTER 5
SB X7-7 Baselines and Targets

In November 2009, SB X7-7, the Water Conservation Act of 2009, was signed into law by Governor Arnold Schwarzenegger as part of a comprehensive water legislation package. The Water Conservation Act addresses both urban and agricultural water conservation. The legislation sets a goal of achieving a 20 percent statewide reduction in urban per capita water use by the year 2020 (i.e., "20 by 2020"), and directs urban retail water suppliers to establish an "interim" per capita water use target to be met by 2015 and a "final" per capita water use target to be met by 2020.

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. 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 (as described below, the 2010 Census data was not finalized until 2012). The DWR Guidebook indicates that there were significant discrepancies between the California Department of Finance (CDoF) estimated 2010 population (based on 2000 U.S. Census data) and the actual 2010 population (based on 2010 U.S. Census data). Therefore, if a water supplier did not use 2010 Census data for their baseline population calculations in the 2010 UWMP, DWR has determined that these water suppliers must recalculate their baseline population for the 2015 UWMP using 2000 and 2010 Census data, and baseline and 2015 and 2020 urban water use targets must be modified accordingly.

This chapter provides a review and update of the City's baseline per capita water use, 2015 interim per capita water use target, and 2020 final per capita water use target in accordance with the requirements described in the DWR Guidebook and based on the 2010 Census population data. The City calculated baselines and targets on an individual reporting basis in accordance with SB X7-7 legislation requirements and *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* (DWR, 2011). The City has achieved compliance with its 2015 interim target, as discussed below, and is well positioned to achieve its 2020 final target. Regional Alliance baselines and targets are discussed in Section 5.8. The SB X7-7 Verification Forms are included in Appendix F.

5.1 UPDATING CALCULATIONS FROM 2010 UWMP

> *CWC 10608.20 (g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).*
>
> *Methodologies DWR 2016, Methodology 2 Service Area Population Page 27 - Water suppliers may revise population estimates for baseline years between 2000 and 2010 when 2010 census information becomes available. DWR will examine discrepancy between the actual population estimate and DOF's projections for 2010; if significant discrepancies are discovered, DWR may require some or all suppliers to update their baseline population estimates.*
>
> *DWR Guidebook, Required Use of 2010 U.S. Census Data page 5-5 – if an agency did not use 2010 Census data for their baseline population calculations in the 2010 UWMP…DWR has determined that these agencies must recalculate their baseline populations for the 2015 UWMPs using 2000 and 2010 Census data. This may affect the baseline and target GPCD values calculated in the 2010 UWMP, which must be modified accordingly in the 2015 UWMP.*

Population data from the 2010 United States Census were not made available until 2012, after the City submitted its 2010 UWMP. Therefore, the City updated population, baselines, and targets for this 2015 UWMP to reflect 2010 Census data. The following sections describe these updates.

5.2 BASELINE PERIODS

SB X7-7 requires each urban water retailer to determine their baseline daily per capita water use, measured in gallons per capita per day (Baseline GPCD), 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 defines that for those urban water retailers that met at least 10 percent of their 2008 water demand using recycled water, the urban water retailer 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 had no recycled water deliveries. SB X7-7 also requires each urban water retailer to determine a 5-year baseline per capita water demand, which DWR calls the Target Confirmation, calculated over a continuous 5-year period ending no earlier than December 31, 2007 and no later than December 31, 2010.

Based on these requirements, the City has selected the following baseline periods:

- 10-year Baseline Period: 1999 to 2008
- 5-year Baseline Period: 2004 to 2008

These baseline periods are listed in SB X7-7 Table 1 in Appendix F. It should be noted that the 10-year and 5-year periods are the same as reported in the City's 2010 UWMP.

5.3 SERVICE AREA POPULATION

> *DWR Guidebook, Required Use of 2010 U.S. Census Data page 5-5 – if an agency did not use 2010 Census data for their baseline population calculations in the 2010 UWMP…DWR has determined that these agencies must recalculate their baseline populations for the 2015 UWMPs using 2000 and 2010 Census data. This may affect the baseline and target GPCD values calculated in the 2010 UWMP, which must be modified accordingly in the 2015 UWMP.*

This section includes a discussion of the City's service area population including 2000 and 2010 U.S. Census data. Population reported in the City's 2010 UWMP did not include 2010 U.S. Census data because the full Census data set was not available until 2012.

The CDoF 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 population of the City's current water service area is the same as the City limits, CDoF population data for the City of Antioch is valid for use as the service area population.

CDoF updated the estimated population from 2001 through 2010 following an analysis of 2010 Census data. Historical service area population during the 10- and 5-year baseline periods are shown in Appendix F. The revised population estimates were consistently less than the previous population estimates. In 2001, the difference in the two estimates was 208 persons (approximately 0.5 percent), and by 2009, the difference was 85 persons (approximately 0.08 percent).

5.4 GROSS WATER USE

Annual gross water use 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 2015, in accordance with Methodology 1: Gross Water of DWR's *Methodologies* document.

> *CWC 10608.12 (g) "Gross Water Use" means the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:*
>
> *(1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier*
>
> *(2) The net volume of water that the urban retail water supplier places into long term storage*
>
> *(3) The volume of water the urban retail water supplier conveys for use by another urban water supplier*
>
> *(4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24.*
>
> *California Code of Regulations Title 23 Division 2 Chapter 5.1 Article Section 596 (a) An urban retail water supplier that has a substantial percentage of industrial water use in its service area is eligible to exclude the process water use of existing industrial water customers from the calculation of its gross water use to avoid a disproportionate burden on another customer sector*

Annual gross water use for the baseline periods and 2015 are summarized in Appendix F. The revised annual gross water use values are slightly less than those documented in the City's 2010 UWMP. However, the difference is less than 2 percent.

5.5 BASELINE DAILY PER CAPITA WATER USE

As indicated above, 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 above, the City has used updated population data in this 2015 UWMP. The City's baseline daily per capita was use has been calculated as follows:

- 10-year Base Daily Per Capita Water Use
  - 185 GPCD (for the period from 1996 to 2005)
  - This value is 1 GPCD less than the value calculated in the 2010 UWMP (186 GPCD)
- 5-year Base Daily Per Capita Water Use
  - 184 GPCD (for the period from 2004 to 2008)
  - This value is 3 GPCD less than the value calculated in the 2010 UWMP (187 GPCD)

These values are shown in SB X7-7 Table 5 in Appendix F.

5.6 2015 AND 2020 TARGETS

SB X7-7 requires a state-wide average 20 percent reduction of urban per capita water use by the year 2020. Therefore, the City must set an interim (2015) water use target and a final (2020) water use target using one of four methods defined by SB X7-7 and DWR. 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 is 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 2015 interim targets for each of the target methods are calculated based on the midpoint of the City's 10-year Base Daily Per Capita Water Use and the 2020 targets calculated for each of the respective target methods.

Urban water suppliers must verify that their 2020 final water use targets are least a 5 percent reduction from the 5-year baseline GPCD. As shown in SBX7-7 Table 7-F in Appendix F, the City's maximum 2020 target is 175 GPCD (95 percent of the City's 5-year base daily per capita water use of 184 GPCD). The City's Method 3 2010 target of 165 GPCD complies with this minimum reduction.

Target Method 3 results in the highest allowable SB X7-7 final (2020) target (165 GPCD by 2020), and would therefore be most favorable to the City. Because the minimum water use reduction requirement based on the Method 3 Target is less than the 5-year Target Confirmation calculation (175 GPCD by 2020), the City adopted an SB X7-7 per capita water use 2020 final target of 165 GPCD.

The interim 2015 target is the midpoint between the City's 10-Year Base Daily Per Capita Water Use (185 GPCD) and the final 2020 target (165 GPCD). Therefore, the City's interim 2015 target is 175 GPCD.

The City's interim and final targets are summarized in Table 5-1.

Table 5-1. Baselines and Targets Summary (DWR Table 5-1)

Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 Year	1999	2008	185	175	165
5 Year	2004	2008	184		
*All values are in Gallons per Capita per Day (GPCD).					

For this 2015 UWMP, the City has selected the same target method as was used in the 2010 UWMP (Method 3). The City understands that this target method may not be changed in any amendments to the 2015 UWMP or 2020 UWMP.

5.7 2015 COMPLIANCE DAILY PER CAPITA WATER USE (GPCD)

The City has calculated its actual 2015 water use for the 2015 calendar year in accordance with Methodology 4 of DWR's *Methodologies* document. As shown in Table 5-2, urban per capita water use in 2015 was 114 GPCD, which is below the 2015 interim water use target of 175 GPCD. Therefore, the City has met its interim 2015 water use target. The complete set of SB X7-7 verification tables used to document this compliance is included in Appendix F.

Table 5-2. 2015 Compliance (DWR Table 5-2)

Actual 2015 GPCD*	2015 Interim Target GPCD*	**Optional Adjustments to 2015 GPCD** *From Methodology 8*					2015 GPCD* *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Extraordinary Events*	Economic Adjustment*	Weather Normalization*	TOTAL Adjustments*	Adjusted 2015 GPCD*		
114	175	0	0	0	0	114	114	Yes
All values are in Gallons per Capita per Day (GPCD).								

As detailed in DWR's *Methodologies* document, there are allowable adjustments that can be made to an agency's gross water use in 2015 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.

5.8 REGIONAL ALLIANCE

The City has chosen to comply with the requirements of SB X7-7 in a regional alliance under its wholesaler, CCWD. This regional alliance includes CCWD's retail service area and its wholesale municipal customers (Cities of Antioch, Pittsburg, and Martinez, Golden State Water Company, and Diablo Water District). Each agency will meet the requirements of SB X7-7 if it achieves the reductions on its own, or if the region meets the requirement as a whole. CCWD is updating the baseline per capita consumption, interim (2015) target, and final (2020) target for the Contra Costa Water District Alliance. These updated values will reflect the impact of revised CDoF population estimates and 2015 compliance and will be included in CCWD's 2015 UWMP. A letter documenting the Regional Alliance is included in Appendix K.

Per capita consumption is anticipated to increase in the coming years as a result of drought rebound and improving economic conditions. However, the City and CCWD will continue to implement their conservation programs to reduce long-term water demand in conformance with the requirements of SB X7-7.

Although the City is a part of a regional alliance with CCWD, the City has chosen to prepare this 2015 UWMP on an individual reporting basis because the City meets the reduction requirements of SB X7-7 on its own.

This chapter describes the water supplies currently available to the City, as well as future anticipated water supplies. The City currently utilizes water from the following sources:

- Local surface water withdrawn from the Sacramento-San Joaquin Rivers Delta,
- Imported surface water from CCWD, and
- Recycled water from DD.

These sources, along with the other projected future supplies, including recycled water, and the potential for brackish water desalination and exchanges or transfers are described in this chapter.

6.1 PURCHASED OR IMPORTED WATER

The City is one of twelve cities in central and eastern Contra Costa County that are contract customers to the CCWD for the wholesale purchase of water. The CCWD provides clean water to approximately 500,000 people in central and eastern Contra Costa County and is operated by the United States Bureau of Reclamation (Bureau).

6.1.1 Contra Costa Canal

CCWD supplies water to the City from diversions at the Middle River (Victoria Canal), Rock Slough, and Old River in the Sacramento-San Joaquin Rivers Delta. Water is then conveyed through the 52-mile Contra Costa Canal where it can be used as storage in the Los Vaqueros Reservoir. The CCWD provides wholesale water to the City. The City's current annual agreement is for a peak demand of 25,000 GPM (36.0 MGD). However, currently the CCWD withdraws only 67 percent of its annual 195,000 AF (63,500 MG) allotment from the Delta. Unless constrained by drought conditions, CCWD is prepared to sell to the City all of the City's projected water needs through the year 2028. Based on recent studies, the existing Canal does not have sufficient capacity to carry the City's increased future flow together with those required by other customers, but CCWD has installed a pipeline parallel (multipurpose pipeline) to the Canal to satisfy such demands.

The quality of the water in the Canal is beyond the direct control of CCWD. It depends on overall Delta water quality which is affected by a multitude of factors including weather, upstream reservoir releases, tidal changes, discharge of nearby agricultural users, export rates of the pumps for the State Water Project and Central Valley Project, and standards and objectives set by the State Water Resources Control Board (SWRCB) and the United States EPA. The Canal was one of the first units in the Central Valley Project. Although the Bureau has a contract to deliver the water to the Canal, the contract includes no water quality requirements. According to the contract, the Bureau is "…to maintain the quality of the raw water to be delivered hereunder at the highest level reasonably attainable and consistent with municipal and industrial use." The Bureau is not required to meet any specific water quality level for the Canal. The future water quality depends, primarily, on two factors:

- Operation of the Los Vaqueros Project, and
- Outcome of the Bay-Delta proceedings.

The Los Vaqueros Project, approved by the voters in November 1988, resulted in the construction 100,000 AF storage reservoir located southwest of Brentwood. This project allows CCWD to draw low salinity (as measured by total dissolved solids [TDS] or chlorides) water from the Delta during high runoff periods. Los Vaqueros Reservoir also serves as emergency storage in the event of a chemical spill in the Delta or other disruption such as a levee failure. To help ensure high-quality water deliveries to customers, reliability during drought, and the protection of Delta fisheries and the environment, the Low Vaqueros Reservoir was expanded from 100,000 AF to 160,000 AF. The expansion was completed in the fall of 2012. In January 2013, the District began filling the reservoir above its previous capacity.

6.1.1.1 Impacts of Regulatory Processes

The Delta is a critical natural resource for California and the nation's agriculture. However, currently the Delta is considered to be in ecological crisis. In 2009, the State passed legislation to define a planning and implementation process for the Delta. The legislation is part of a comprehensive package of four policy bills and a bond measure. One of the bills is the Delta Protection Act of 2009, Senate Bill X7-1 (SB X7-1).

A summary of SB X7-1 includes the following:

- Formation of the Delta Investment Fund in the State Treasure to fund implementation of the regional economic sustainability plan and ecosystem restoration projects.
- Formation of the Sacramento-San Joaquin Delta Conservancy. The conservancy acts as the primary state agency to implement ecosystem restoration in the Delta and supports environmental protection and economic well-being of Delta residents.
- Formation of a committee convened by the Secretary of the Natural Resources Agency to develop and submit recommendations for a strategic plan related to sustainable management of the Delta.
- Enactment of the Delta Reform Act of 2009 and establishment of the Delta Stewardship Council (DSC). The DSC was required to develop, adopt, and commence implementation of a comprehensive resources management plan (the Delta Plan) for the Sacramento-San Joaquin Delta (Delta). The DSC is required to develop the Delta Plan by January 1, 2012. Development of the Delta Plan is a significant effort that requires integration with other planning efforts, such as the Bay Delta Conservation Plan (BDCP).
- The DSC efforts are built upon other related planning agencies that were formed historically. The Delta Protection Commission, which was formed by the Delta Protection Act of 1992, was formed to prepare and adopt a comprehensive long-term resource management plan for specified lands within the Delta. SB X7-1 revised and recasted the provisions of the Delta Protection Act, including a reduction in the number of commission members and a requirement for the commission to recommend redefining the primary zone of the Delta.
- Requirements of DWR in connection with the BDCP.

- Formation of the Delta Independent Science Board to develop a scientific program related to management of the Delta.
- Requirement of the SWRCB to establish an effective system of Delta watershed diversion data collection and public reporting. The SWRCB is required to develop new flow criteria for the Delta ecosystem and to submit the flow criteria to the council.
- Repeal of the California Bay-Delta Authority Act that established the California Bay-Delta Authority (CBDA). CBDA was responsible for acting as the authority and implementing agency to conduct programs, projects, and activities to address CALFED goals and objectives.
- Appropriation of $28,000,000 in bond money from the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006.

The basic goals for the Delta planning process as defined by State Legislature are as follows:

- Achieve the two coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place.
- Protect, maintain, and, where possible, enhance and restore the overall quality of the Delta environment, including, but not limited to, agriculture, wildlife habitat, and recreational activities.
- Ensure orderly, balanced conservation and development of Delta land resources.
- Improve flood protection by structural and nonstructural means to ensure an increased level of public health and safety.

The component of the Delta Protection Act that most significantly affects the City and its wholesaler, CCWD, is the adoption of Delta flow criteria. In August 2003, the State Water Resources Control Board adopted new flow criteria recommendations for the Delta that call for significantly increased flows into and through the Delta, particularly during the winter and spring.

Until planning efforts result in implementation, Delta water quality is currently dependent on past actions. In August 1978, the SWRCB issued Water Right Decision 1485, setting water quality standards in the Delta to be maintained by the State Water Project and Central Valley Project as a condition of their permit to store above and divert from the Delta. Review of historical water quality data indicate that if the maximum daily mean for chloride is kept below 250 mg/L, the other drinking water standards should not be exceeded, with the possible exception of trihalomethanes (THMs). During disinfection of source water, organic carbon can react with chlorine to form carcinogenic compounds such as THMs and haloacetic acids (HAAs). The City is currently meeting all standards including those for DBPs. No problems are foreseen that will prevent the City from meeting future standards. However, the City may need some treatment modifications to respond to changing regulations.

6.2 GROUNDWATER

The City currently does not use groundwater for water supplies, nor does it currently expect to use groundwater by the year 2040, as indicated in Table 6-1.

Table 6-1. Retail: Groundwater Volume Pumped (DWR Table 6-1)

☑	Supplier does not pump groundwater. The supplier will not complete the table below.					
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
	TOTAL	0	0	0	0	0

6.3 SURFACE WATER

The City's surface water supplies consist of Canal water purchased from the CCWD and the Sacramento-San Joaquin Rivers Delta water drawn by the City. Currently, the City's water system relies entirely on surface water. The Canal water purchased from CCWD was described previously in Section 6.1. The local surface water supplies from the Sacramento-San Joaquin Rivers Delta and municipal reservoir are described below.

6.3.1 Sacramento-San Joaquin Rivers Delta

The Sacramento-San Joaquin Delta represents a region where the two of California's largest rivers converge. More than 23 million Californians, millions of acres of farmland, and numerous species depend on the Sacramento-San Joaquin Rivers Delta for their water supply. Hence, the Delta has been considered the hub of California's water distribution system.

For over 145 years, the Sacramento-San Joaquin Rivers Delta has been a primary source of water supply for the City and other local inhabitants. However, as a result of the irrigated rice industry's diversions from the Delta around World War I, flows into the Delta significantly decreased and saline bay waters moved further upstream replacing the fresh water. After the Supreme Court moved the City's diversion point upstream in 1922, the City had typically been able to pump from the Sacramento-San Joaquin Rivers Delta for varying periods up to more than 300 days per year. Exceptions include the drought period of from 1976 to 1977 where no pumping occurred and from 1986 to March 1991 where the City was only able to pump seven days a year. The City does not pump water from the Delta when the mean chloride concentration exceeds 250 milligrams per liter (mg/L). However, if the chloride concentration in the municipal reservoir water is particularly low, the City may continue limited pumping to the municipal reservoir even when the chloride concentration exceeds 250 mg/L in the river.

In 1968, the DWR and the City established an agreement that allows the City to pump water with a chloride content less than 250 mg/L for at least 208 days per year. Currently, if the long-term average days of river pumping are less than 208 days per year, the DWR will pay for one-third of the incremental difference in cost to the City between using river water and Canal water.

Water quality in the Sacramento-San Joaquin Delta will continue to be impacted by decisions outside the City's control. State plans call for increased water diversions from the Delta to satisfy water demands in the San Joaquin Valley and areas to the south and west. Any decrease in the net flow from east to west of the City's withdraw point in the Delta will tend to increase chloride concentrations. Currently, the City cannot withdraw more than 16.0 MGD from the Sacramento-San Joaquin Rivers Delta because of the limited capacity of the river pumping station and the raw water pipeline from the river to the municipal reservoir. The Water Rights Division of SWRCB identified no quantity limitation on the City's appropriation from the Sacramento-San Joaquin Rivers Delta provided that diverted water is used beneficially. Once the City fills the municipal reservoir, it can only pump water to offset water used on a day-by-day basis and the small amount lost through evaporation.

6.3.2 Municipal Reservoir

The City uses a 240 MG municipal reservoir to enhance supply reliability and provide equalization storage for the water pumped from the Sacramento-San Joaquin Rivers and the Contra Costa Canal. The use of equalizing volume allows the purchase of raw water at a constant rate for periods of a month or more, depending on the season of the year. Water is withdrawn from the reservoir at varying rates to meet fluctuating demand conditions. The ability to purchase water at uniform rates has been a significant economic value to the City. Raw water reservoir equalization may also be of value in the future. The storage volume which will be needed for equalization purposes will therefore depend upon the rate schedule and service rules which will be promulgated in coming years. It is likely, however, that the 240-MG available in the municipal reservoir will be sufficient for this purpose. For planning purposes, the City does not assume storage will be available in the municipal reservoir.

The reservoir could also serve secondary purposes of flood control and impoundment of local runoff. Water production from the small (1,300 acre) tributary watershed is negligible particularly since most stormwater runoff from residential areas (about 600 acres) is now diverted around the reservoir.

6.4 STORMWATER

In 1989, Congress passed amendments to the Clean Water Act requiring states to address the increasing problem of stormwater pollution entering storm drains. The state of California requires a National Pollutant Discharge Elimination System (NPDES) permit to regulate stormwater discharges. The City's NPDES program consists of six major pollution prevention and control activities:

- Outreach & Education
- Inspection & Enforcement
- Spill Clean-up
- Storm Drain Maintenance
- Channel and Creek Maintenance
- Street Sweeping

The four creeks that receive runoff through the City's storm drains are the East Antioch Creek, Markley Creek, Sand Creek, and West Antioch Creek. Storm water flows into these local creeks and eventually to the San Joaquin River untreated.

Stormwater can be beneficially reused as a water supply source to meet local water supply demands. Beneficial reuses include blending with other water supplies for groundwater recharge, redirecting it into constructed wetlands or landscaping, and diverting it to a treatment facility for subsequent reuse. Currently, the City does not implement any storm water recovery systems to specifically offset potable water use.

6.5 WASTEWATER AND RECYCLED WATER

This section discusses recycled water coordination; the wastewater collection, treatment, and disposal system; and, recycled water use in the City's water service area.

6.5.1 Recycled Water Coordination

DD is the agency responsible for treating and discharging treated wastewater for the Cities of Antioch and Pittsburg and the unincorporated community of Bay Point located in Contra Costa County. DD collected an estimated 4,453 MG of wastewater in 2015. Approximately 43 percent of the wastewater is treated to recycled water for various landscaping, agricultural and industrial uses for the Cities of Antioch and Pittsburg.

Within the last 5 years, DD and its contributing agencies have moved to expand recycled water use within DD's service area. Recently, DD's recycled water system was expanded to serve parts of Antioch. Currently, recycled water is used within the City to irrigate four City parks and portions of the Lone Tree Golf Course. DD recently negotiated an agreement with CCWD to allow for the development of an additional 539 MG/yr (1,654 AFY) of recycled water for urban landscape and golf course irrigation projects within the DD service area.

The City plans to continue to coordinate with DD on the quality and availability of wastewater for beneficial reuse.

6.5.2 Wastewater Collection, Treatment, and Disposal

The City's sanitary sewer system includes approximately 292 miles of gravity sewer mains. Almost 50 percent of the gravity sewer mains are 6 inches in diameter and about 85 percent are less than 10 inches. All of the sewer pump stations and force mains in the City's wastewater system have been decommissioned. Two of DD's pump stations (Bridgehead Pump Station and Antioch Pump Station) transport the majority of the City's collection system to the DD Wastewater Treatment Plant (WWTP). A small portion of the City's system along the border with the City of Pittsburg discharges to DD's Pittsburg-Antioch Interceptor.

The City's sanitary sewer system is currently designed to accommodate average dry weather flows of 11.80 MGD. Current average dry weather discharge is 7.64 MGD. The Bridgehead and Antioch Pump Stations and Pittsburg-Antioch Interceptor are able to accommodate peak wet weather flows of 26.3 MGD and 1.2 MGD, respectively.

The DD WWTP has a dry weather permitted capacity of 16.5 MGD with an ultimate capacity of 22.7 MGD. The average dry weather flow to the treatment plant, which includes the City of Pittsburg's wastewater, is 13.2 MGD. DD's WWTP has primary, secondary, and partial tertiary treatment capabilities. The major treatment processes include screening and grit removal, primary clarification, tower trickling filters, aeration in an activated sludge system, secondary clarification, and disinfection/chlorination. Treated and disinfected secondary effluent discharges to New York Slough in the Sacramento-San Joaquin Rivers Delta. The DD WWTP operates under a Waste Discharge Requirements (WDR) and a NPDES Permit issued by the Regional Water Quality Control Board.

Table 6-2 summarizes the information on the collection of wastewater generated within DD's service area in 2015.

DD's wastewater service area is larger than the City's water service area. It is estimated that 45 percent of DD's total wastewater service area is located within the City's water service area. Table 6-3 identifies the treated wastewater disposed of within the service area in 2015, which includes wastewater that originated outside of the City.

Table 6-2. Retail: Wastewater Collected Within Service Area in 2015 (DWR Table 6-2)

☐	There is no wastewater collection system. The supplier will not complete the table below.
100	Percentage of 2015 service area covered by wastewater collection system *(optional)*
100	Percentage of 2015 service area population covered by wastewater collection system *(optional)*

Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party? *(optional)*
City of Antioch	Metered	1,988	Delta Diablo (DD)	DD WWTP	Yes	No
Total Wastewater Collected from Service Area in 2015:		1,988				

NOTES: Volumes are in MG. Volume of wastewater collected from the City of Antioch is metered at the Antioch Pump Station (additional flows from the Antioch-Pittsburg interceptor are not routinely monitored).

Table 6-3. Retail: Wastewater Treatment and Discharge Within Service Area in 2015 (DWR Table 6-3)

Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)*	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2015 volumes			
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
Delta Diablo	New York Slough	Sacramento-San Joaquin Rivers Delta	2071013001	Bay or estuary outfall	Yes	Tertiary	4,453	2,547	79	1,827
						Total	4,453	2,547	79	1,827

NOTES: Volumes are in MG. Approximately 495 AF of recycled water effluent is returned to treatment plant as blowdown from Calpine. This recycled water volume is not included in the treated wastewater total.

6.5.3 Recycled Water Use

In 2001, DD constructed a recycled water facility in order to reduce water dependence on Delta water supplies, improve water supply reliability for irrigation customers, and reduce wastewater discharges to the Delta. Approximately 43 percent of the DD's wastewater is used for recycled supply for various uses. The remaining wastewater is disposed through a river outfall into the Delta at New York Slough.

Since 1999, DD, in cooperation with Calpine Corporation has been delivering recycled water from the DD WWTP to two power plants and some park areas within the City of Pittsburg. DD has provided approximately 7 MGD of recycled water on average since completing construction of a 12.8 MGD recycled water facility in 2001. This facility is one of the largest industrial recycled projects in the state of California.

In 2007, the City of Antioch and DD approved the Antioch Urban Reuse Project in order to provide recycled water to irrigation users in Antioch. The Antioch Urban Reuse Project constructed 32,000 feet of recycled water PVC pipeline for use as landscape irrigation at medians, municipal parks, playing fields, the Lone Tree Golf Course, and any other green spaces.

6.5.4 Recycled Water Beneficial Uses

DD and its contributing agencies have moved to expand recycled water use within DD's service area in order to:

- Reduce Dependence on Delta Supplies: Delta supplies are the primary water source in DD's service area. Recycled water would reduce Delta water diversions by CCWD and the City.
- Improve Water Supply Reliability: Recycled water is not affected by hydrologic variability, and provides additional dry-year reliability.
- Preserve Potable Water Supplies: Recycled water use can offset potable water supply demands by serving non-potable demands such as irrigation.
- Reduce Wastewater Discharges: Recycled water use reduces wastewater discharges, which is beneficial to DD, who currently discharges its wastewater effluent into the New York Slough. With increasingly stringent wastewater discharge regulations, reusing wastewater helps DD in reducing effluent volume and trace constituents in its wastewater discharges.

Recycled water is primarily used for landscape irrigation within the City's service area. Currently, the City uses recycled water to irrigate four City parks and portions of the Lone Tree Golf Course.

Recycled water use for agricultural irrigation and industrial reuse are not feasible because the City does not have nor anticipates such uses. Recycled water use for wildlife habitat, wetlands, groundwater recharge, seawater barrier, geothermal/energy, and indirect potable reuse are not feasible because such uses do not exist, nor are they planned, in City's service area.

Table 6-4 summarizes the amount of recycled water being used in 2015 for each direct beneficial use, as well as projected volumes and uses into the future.

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

☐	Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.							
Name of Agency Producing (Treating) the Recycled Water:		Delta Diablo						
Name of Agency Operating the Recycled Water Distribution System:		City of Antioch						
Supplemental Water Added in 2015		None						
Source of 2015 Supplemental Water		Not Applicable						
Beneficial Use Type	General Description of 2015 Uses	Level of Treatment	2015	2020	2025	2030	2035	2040 (opt)
Agricultural irrigation								
Landscape irrigation (excludes golf courses)	City Parks	Tertiary	14	183	346	346	346	346
Golf course irrigation	Lone Tree Golf Course	Tertiary	65	143	143	143	143	143
Commercial use								
Industrial use								
Geothermal and other energy production								
Seawater intrusion barrier								
Recreational impoundment								
Wetlands or wildlife habitat								
Groundwater recharge (IPR)*								
Surface water augmentation (IPR)*								
Direct potable reuse								
Other *(Provide General Description)*								
		Total:	79	326	489	489	489	489
**IPR - Indirect Potable Reuse*								
NOTES: Volumes are in MG.								

The 2015 projected estimates of recycled water use from the City's 2010 UWMP is compared to the actual 2015 recycled water use in Table 6-5.

Table 6-5. Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual (DWR Table 6-5)

Use Type	2010 Projection for 2015	2015 Actual Use
Agricultural irrigation	0	0
Landscape irrigation (excludes golf courses)	16	14
Golf course irrigation	143	65
Total	159	79
NOTES: Volumes are in MG.		

6.5.5 Actions to Encourage and Optimize Future Recycled Water Use

In June 2015, Governor Jerry Brown signed Senate Bill 88 which exempts recycled water projects from the development and approval of building standards established in the California Environmental Quality Act (CEQA). In order to be exempt, the projects cannot affect wetlands or sensitive habitats and need to mitigate drought conditions. Because of SB 88, recycled water projects will not have to go through the six month to year State approval which significantly improves the construction timeline and costs. Proposition 1, passed in November 2014, has also encouraged the development of recycled water facilities by granting the state of California $7.5 billion to appropriate to water quality, supply, and infrastructure improvement programs.

The DD has served as the lead agency for the Western Recycled Water Coalition (WRWC), formerly the Bay Area Recycled Water Coalition (BARWC). The WRWC is a partnership of public agencies committed to developing recycled water as a resource for the residents of the San Francisco Bay area, as a means to procure funding for recycled water.

The City plans on promoting recycled water use by means of public outreach, such as billing fliers, newsletters, public meetings, and advertisement. The water savings for recycled water public outreach have yet to be developed. The City also plans to expand the recycled water facilities within the City. New developments are being required to install recycled water facilities as part of their improvements. In addition, the City has recently met with Delta Diablo to discuss possible new facilities within developed areas. The City's ongoing actions to encourage the use of recycled water are summarized in Table 6-6.

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

☐	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
Section 6.5.4	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
Building code modification	New developments are required to install recycled water facilities as part of their improvements	2015	410
Public outreach	Examples include billing fliers, newsletters, public meetings, and advertisement	2011	0
		Total	410
NOTES: Volumes are in MG. The expected increase in recycled water for all actions is included in the "Building code modification" total.			

6.6 BRACKISH WATER DESALINATION OPPORTUNITIES

Desalination is a process that removes chlorides from the water through membranes and disposing of the highly concentrated waste called "brine." The term desalination is actually more accurately used for ocean water that has very high chloride content. The chloride levels in the San Joaquin River are significantly lower than that of ocean water; therefore the water is considered brackish.

Brackish water desalination would improve water quality and water supply reliability and has been identified as a potentially viable additional source of water for the City. Technological advancements that reduce the energy intensity of this water supply option may make brackish water desalination more cost-effective in the future.

Brackish water desalination has been identified as a potentially viable additional source of water for several Bay Area water suppliers including CCWD. CCWD, East Bay Municipal Utility District, SFPUC, Santa Clara Valley Water District, and Zone 7 Water Agency have studied the feasibility of constructing a seawater/brackish water desalination plant. Pilot testing at the CCWD's intake at Mallard Slough indicate that a 10 to 20 MGD brackish water desalination facility would be highly viable at that location.

The City of Antioch has completed Phase I of a Prefeasibility Study for a 16 MGD Brackish Water Desalination Facility. The study evaluated potential funding sources, analysis various brine disposal options and performed a preliminary environmental assessment of the City existing intake facility. The City is currently entering into Phase II of planning and predesign work and environmental documentation it expected to be completed in winter of 2017. According to the San Francisco Bay Hydrologic Region California Water Plan Update (2013), no other desalination projects have been pursued in this region.

6.7 EXCHANGES OR TRANSFERS

The City has no current or future planned agreements for short-term or long-term transfer and exchange within the City's service area.

6.8 FUTURE WATER PROJECTS

There are no expected future supply projects or programs within the City's service, as indicated in Table 6-7. This is due to the fact that the current water supply sources more than adequately meet the projected water use identified in the water supply and demand assessment. The CCWD UWMP includes information from the wholesaler's perspective on this matter.

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

☑	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
☐	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other agencies?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Agency

6.9 SUMMARY OF EXISTING AND PLANNED SOURCES OF WATER

The actual 2015 water supplies for the City are summarized Table 6-8, while the future projected water supplies for the City are summarized in Table 6-9.

Table 6-8. Retail: Water Supplies – Actual (DWR Table 6-8)

Water Supply	Additional Detail on Water Supply	2015		
		Actual Volume	Water Quality	Total Right or Safe Yield *(optional)*
Purchased or Imported Water	Contra Costa Water District	3,915	Raw Water	
Surface water	San Joaquin River Intake	409	Raw Water	
Recycled Water	Delta Diablo	79	Recycled Water	
Supply from Storage	Storage from City Municipal Reservoir	197	Raw Water	
	Total	4,600		0
NOTES: Volumes are in MG; Supply from Storage (Municipal Reservoir) was collected from raw water supplies in previous years and used for consumption in 2015.				

Table 6-9. Retail: Water Supplies – Projected (DWR Table 6-9)

Water Supply	Additional Detail on Water Supply	Projected Water Supply *Report To the Extent Practicable*									
		2020		2025		2030		2035		2040 *(opt)*	
		Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*
Purchased or Imported Water	Contra Costa Water District	4,099		4,309		4,538		4,785		5,044	
Surface water	San Joaquin River Intake	2,460		2,460		2,460		2,460		2,460	
Recycled Water	Delta Diablo	326		489		489		489		489	
	Total	6,885	0	7,258	0	7,487	0	7,734	0	7,993	0
NOTES: Volumes are in MG; CCWD will provide 100% of the potable water demand minus supplies from City intake.											

6.10 CLIMATE CHANGE IMPACTS TO SUPPLY

According to the San Francisco Bay Hydrologic Region California Water Plan Update (2013), climate change is already affecting the San Francisco Bay Area and will have significant impacts on water and other resources in its future. Moreover, there is evidence that a warming trend that occurred during the latter part of the 20th century and will likely continue through the 21st century. These changes will have a direct effect on water resources in California, and numerous studies have been conducted to determine the potential impacts to water resources.

Based on these studies, climate change could result in the following types of water resource impacts, including impacts on the watersheds in the Bay Area:

- Reductions in the average annual snowpack due to a rise in the snowline and a shallower snowpack in the low and medium elevation zones, such as in the Tuolumne River basin, and a shift in snowmelt runoff to earlier in the year;
- Changes in the timing, intensity and variability of precipitation, and an increased amount of precipitation falling as rain instead of as snow;
- Long-term changes in watershed vegetation and increased incidence of wildfires that could affect water quality;
- Sea level rise and an increase in saltwater intrusion;
- Increased water temperatures with accompanying potential adverse effects on some fisheries and water quality;
- Increases in evaporation and concomitant increased irrigation need; and
- Changes in urban and agricultural water demand.

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This chapter describes the long term reliability and vulnerability of the City's water supplies. The City's implemented, or planned to be implemented, water management tools for increasing the reliability of water supplies are also addressed.

7.1 CONSTRAINTS ON WATER SOURCES

In order for the City to expand its water supply and capability in the future, water quality and climate constraints on water sources will need to be evaluated. All of the City's water sources receive full treatment in accordance with Federal and State standards. Each year the City reports water quality test results to its customers through its Annual Water Quality Report. The report includes source water assessments from the CCWD's Delta, reservoir, and Contra Costa Canal sources, as well as Antioch's municipal reservoir and the Sacramento-San Joaquin Rivers Delta source.

Surface water purchased from the CCWD and withdrawn by the City from the Sacramento-San Joaquin Rivers Delta are both affected by climate and water quality. Multiple years of dry-weather will result in a reduction of water supply from both sources. Water quality is a bigger issue for surface water drawn from the Sacramento-San Joaquin Rivers Delta by the City because of its downstream location relative to the CCWD intake. Diminishing water quality levels from the Sacramento-San Joaquin Rivers Delta will occur during dry water years but can also occur if excessive pumping causes a significant decrease in net water flow. The Antioch Municipal Reservoir was found to be most vulnerable to contaminants from the sewer collection systems, rather than contaminants from the water supply.

At this time, the City anticipates that water quality could impact CCWD and Sacramento-San Joaquin Rivers Delta water supplies, but have no impact on recycled water supplies. Therefore, inconsistent sources could be supplemented by alternative sources, such as recycled water, or water use efficiency measures, such as Demand Management Measures/ Best Management Practices (DMM/BMP) and the City's water shortage contingency plan. Being prepared for a wet water year, a critical water year, or somewhere in between, will give the City a better sense of the degree to which they may need to conserve or expand existing water supplies.

7.1.1 Sacramento-San Joaquin Rivers Delta Supplies

As stated previously, the City's principal sources of raw water supply are either withdrawn or diverted from the Sacramento-San Joaquin Rivers Delta. The Delta is a critical resource for the City, as well as California, and the nation (in terms of agricultural production). The vulnerability of the Delta's water supplies to the previously mentioned constraints and the management strategies for addressing these vulnerabilities are discussed below.

7.1.1.1 Reliability of the Delta's Water Supplies

The reliability of the Sacramento-San Joaquin Rivers Delta water supplies is dependent on a variety of factors. To protect key native fish species, regulatory actions have been imposed to reduce the amount of water that can be taken from the Delta, thereby reducing the reliability of the Delta's water supply. In addition, increased water pollutants have caused harm to species and increase treatment costs for the Delta's water supply users. These pollutants include urban

wastewater discharges, agricultural discharges, saltwater intrusion, and previous era pollutants (such as mercury). In order to protect Delta water quality, the SWRCB regulates how much water can be diverted, as well as when that water can be diverted from the Delta. Reduced exports from the Delta could result in increased costs of water statewide. To mitigate the effects of reduced Delta exports, water conservation measures that reduce demand will need to be implemented.

The DWR has implemented several actions to protect and restore California's Delta, as listed below:

- Implement the Bay Delta Conservation Plan (BDCP) in order to evaluate alternatives that restore and protect the Delta's ecosystem and develop options for water conveyance;
- Increase water conservation with the goal of achieving a 20 percent per capita reduction in urban water use statewide by 2020;
- Delta interim actions that involve wetland restoration and fish spawning; and
- Increase groundwater and surface water storage capacity.

In 2009, SB X7-1 was passed which included numerous legislation for establishing water management policies for the Sacramento-San Joaquin Delta. The centerpiece of legislation and the Delta Protection Act of 2009. A summary of the legislation included in SB X7-1 is described in System Supplies, Section 6.3.

The goals and state objectives for the Delta, as defined in Delta Protection Act of 2009 are summarized below:

- Achieve the two coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta's ecosystem. In addition, this shall be achieved by preserving the cultural, recreational, natural resource, and agricultural characteristics of the Delta;
- Improve flood protection through structural and non-structural measures in order to increase public health and safety;
- Ensure orderly development in the Delta; and
- Reduce the state's reliance on the Delta for its water supply either by reducing exports from the Delta or implementing water conservation measures.

Since 2012, Delta exports have been below the historical average due to several dry years and environmental regulatory actions. Exports in the future are expected to continue to decline because of climate change and regulatory actions. According to the BDCP, state and federal agencies could reduce future water exports from the Delta up to one third.

7.1.1.2 Impact of Recent Actions on Dry Year Reliability of Delta Supplies

In order to mitigate the effects of reduced Delta imports, the City has been involved in actions to reduce water demand and supplement supply. These actions are described below.

7.1.1.2.1 Reduction in Demand

DD is the agency responsible for treating and discharging wastewater for the cities of Antioch and Pittsburg and the unincorporated community of Bay Point. Currently, DD collects an estimated 14,700 AFY of wastewater. Approximately 42 percent of that wastewater is recycled to supply for various uses. The remaining wastewater effluent is disposed of through an outfall into the Delta at New York Slough. DD recently negotiated an agreement with CCWD for the development of an additional 1,654 AFY of recycled water for urban landscape and golf course irrigation projects within the DD service area. In the future, DD expects to continue to increase recycled water use.

The City receives recycled water from the DD to irrigate four city parks and the Lone Tree Golf Course. About 0.25 percent of the City's potable use is offset by recycled water use. DD operates and maintains a 1-MG recycled water storage tank at the Lone Tree Golf Course within the City's service area.

Dry-year reliability is improved through recycled water use because recycled water is not affected by hydrologic variability. In addition, recycled water use can offset potable water supply demands by serving non-potable demands such as irrigation. Therefore, by receiving recycled water from the DD, the City reduces dependence on Delta supplies, improves water supply reliability, and preserves potable water supplies.

7.1.1.2.2 Supplemental Supply

The CCWD's completion of the Los Vaqueros Reservoir expansion from 100,000 AF to 160,000 AF in 2012 has improved water quality, increased emergency storage, and enhanced the reliability of purchased water supply for the City.

The CCWD may be able to manage potential water supply loss associated with reduced fresh water exports from the Delta through the following actions and considerations:

- Development of additional conservation and recycling; and
- Development of a brackish water desalination project.

Recently, the Contra Costa Water District, East Bay Municipal Utility District, SFPUC, Santa Clara Valley Water District, and Zone 7 Water Agency have agreed that a 10 to 20 MGD brackish water desalination facility would be viable at Contra Costa Water District's Mallard Slough Pump Station. However, as of 2013, the project is still in the planning phase. The City of Antioch is currently performing planning and redesign work for at 16 MGD Brackish Water Treatment Facility. This work and environmental documentation is expected to be completed in the winter of 2017.

7.2 RELIABILITY BY TYPE OF YEAR

The quantity of supply available from different water supply sources can vary from one year to the next depending on hydrologic conditions. Historical data, where available, were therefore used to develop a projected yield for each water supply source under three conditions: (1) normal water year, (2) single dry year, and (3) multiple dry years. In accordance with the DWR's Guidebook, each condition was defined as follows:

- *Normal Water Year:* The year in the historical sequence most closely representing average runoff or allocation levels and patterns.
- *Single-Dry Year:* The year with the lowest annual runoff or allocation in the historical sequence.
- *Multiple-Dry Year:* The lowest average runoff or allocation for a consecutive 5-year period in the historical sequence.

The water supply reliability goal approved by the CCWD's Board of Directors is to meet 100 percent of demand in normal years and at least 85 percent of demand during drought conditions. The remaining 15 percent would be met by a combination of short-term water purchases and a voluntary short-term conservation program. CCWD's water supply reliability information is shown in Table 7-1. A copy of CCWD's Supply Reliability Analysis is included in Appendix G.

Table 7-1. CCWD Water Supply Reliability Information (percent of Demand)

Year Type	2020	2025	2030	2035	2040
Normal Year	100%	100%	100%	100%	100%
Single-Dry Year	100%	100%	100%	100%	100%
Multi-Dry Year, Year 1	100%	100%	100%	100%	100%
Multi-Dry Year, Year 2	100%	100%	100%	98%	94%
Multi-Dry Year, Year 3	90%	90%	90%	88%	85%

The City's direct supply from the Sacramento and San Joaquin Rivers Delta is assumed to be unavailable during second and third dry years, due to salinity restrictions. The City's municipal reservoir is assumed to not provide supplies during second and third dry years as well.

Table 7-2 lists the years that the City identifies as their historical average, single driest year, and driest multi-year period. These years are also known as the "Base Years." The available supplies column specifies the percentage and volume of the water supply expected if there were to be a repeat of the hydrology from that type of year.

Table 7-2. Retail: Bases 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 1999-2000, use 2000*	Available Supplies if Year Type Repeats	
		☐ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____	
		☑ Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available	% of Average Supply
Average Year	2000-2004	9,973	100%
Single-Dry Year	1994	9,275	93%
Multiple-Dry Years 1st Year	1987	9,275	93%
Multiple-Dry Years 2nd Year	1988	6,682	67%
Multiple-Dry Years 3rd Year	1989	6,682	67%
NOTES: Volumes are in MG.			

7.3 SUPPLY AND DEMAND ASSESSMENT

In order to make the best determination of the reliability of the City's water supplies, the supply and demand for various types of years are quantified and discussed below.

7.3.1 Normal Year

As described in the previous section, the City's Normal Year supplies are anticipated to be as follows:

- About 2,460 MG/yr from the Sacramento-San Joaquin Rivers Delta;
- About 326 MG/yr of recycled water in 2020 and 489 MG/yr of recycled water in 2025 and subsequent years; and
- Purchased supplies from the CCWD are assumed to provide 100 percent of the City's remaining demand.

As described in Chapter 4, the City's Normal Year demands have been projected based on the City's adopted SB X7-7 per capita water use targets of 165 GPCD for 2020 and subsequent years.

As shown in Table 7-3, the City's Normal Year supplies are adequate to meet projected Normal Year demands.

Table 7-3. Retail: Normal Year Supply and Demand Comparison (DWR Table 7-2)

	2020	2025	2030	2035	2040 *(Opt)*
Supply totals	6,885	7,258	7,487	7,734	7,993
Demand totals	6,885	7,258	7,487	7,734	7,993
Difference	0	0	0	0	0
NOTES: Volumes are in MG; table references refer to DWR table numbers.					

7.3.2 Single Dry Year

The City's Single Dry Year supplies are anticipated to be as follows:

- About 2,460 MG/yr from the Sacramento-San Joaquin Rivers Delta;
- About 326 MG/yr of recycled water in 2020 and 489 MG/yr of recycled water in 2025 and subsequent years; and
- Purchased supplies from the CCWD are assumed to provide 100 percent of the City's remaining demand.

In Single Dry Years, the City plans to use its available local supplies first, and then purchase the maximum available supplies from CCWD to minimize required demand reductions by its customers. It is assumed that the City would implement demand reduction meaures to reduce demands as necessary.

The City's Single Dry Year demands are assumed to be the same as normal year demands.

As shown in Table 7-4, the City's Single Dry Year supplies are adequate to meet projected Single Dry Year demands.

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

	2020	2025	2030	2035	2040 (Opt)
Supply totals	6,885	7,258	7,487	7,734	7,993
Demand totals	6,885	7,258	7,487	7,734	7,993
Difference	0	0	0	0	0
NOTES: Volumes are in MG.					

7.3.3 Multiple Dry Year

As described in the previous section, the City's Multiple Dry Year supplies are anticipated to be as follows:

- First Year
  - City supplies will be the same as the Single Dry Year supplies (see discussion above)
- Second Year
  - No supplies from the Sacramento-San Joaquin Rivers Delta;
  - About 326 MG/yr of recycled water in 2020 and 489 MG/yr of recycled water in 2025 and subsequent years; and
  - Purchased supplies from the CCWD are assumed to provide 100 percent of the City's normal year demand from 2020 through 2030, 98 percent of the City's normal year demand for 2035, and 94 percent of the City's normal year demand in 2040.
- Third Year
  - No supplies from the Sacramento-San Joaquin Rivers Delta;
  - About 326 MG/yr of recycled water in 2020 and 489 MG/yr of recycled water in 2030 and subsequent years; and
  - Purchased supplies from the CCWD are assumed to provide 90 percent of the City's normal year demand from 2020 through 2030, 88 percent of the City's normal year demand for 2035, and 85 percent of the City's normal year demand in 2040.

As in Single Dry Years, in the first year of a Multiple Dry Year hydrologic condition the City plans to use its available local supplies first, and then purchase the maximum available supplies from CCWD to minimize required demand reductions by its customers. In the second and third years, the City is assuming that salinity levels will prevent pumping from the City's Sacramento-San Joaquin Rivers Delta intake and all supplies must come from CCWD.

The City's Multiple Dry Year demands will be reduced by up to 15 percent by 2040 using the City's Water Shortage Contingency Plan (Chapter 8) to meet the available supply from CCWD listed above. The resulting supply and demand comparison is shown in Table 7-5.

Table 7-5. Retail: Multiple Dry Years Supply and Demand Comparison (DWR Table 7-4)

		2020	2025	2030	2035	2040 (Opt)
First year	Supply totals	6,885	7,258	7,487	7,734	7,993
	Demand totals	6,885	7,258	7,487	7,734	7,993
	Difference	0	0	0	0	0
Second year	Supply totals	6,885	7,258	7,487	7,589	7,543
	Demand totals	6,885	7,258	7,487	7,589	7,543
	Difference	0	0	0	0	0
Third year	Supply totals	6,229	6,581	6,787	6,865	6,867
	Demand totals	6,229	6,581	6,787	6,865	6,867
	Difference	0	0	0	0	0
NOTES: Volumes are in MG; Assumes potable water demand will reduce by up to 15 percent in the third year of a multi-dry year to meet available supplies. CCWD supplies vary according to CCWD reliability policy and includes a maximum supply reduction of 15 percent by 2040.						

7.4 REGIONAL SUPPLY RELIABILITY

The City has used water management tools to maximize local water resources and minimize imports. The City has and continues to participate with CCWD to implement some water conservation measures as part of CCWD's wholesaler water conservation program in order to maximize the use of local water resources. The City is responsible for water conservation marketing and outreach to the City's customers.

CHAPTER 8
Water Shortage Contingency Planning

This chapter describes the City's strategic planning process to prepare for and respond to water shortages. This includes the estimated three-year minimum water supply, the actions and stages described in the water conservation ordinance that will be implemented in the event of a water supply shortage, and the emergency preparedness and plans for catastrophic events. The purpose of the water shortage contingency plan (WSCP) is to help the City maintain reliable supplies and reduce the impacts of supply interruptions.

On March 24, 2009, the City Council declared a water shortage emergency and directed the preparation of a drought emergency program ordinance. On May 26, 2009, the City Council adopted Ordinance No. 2026-C-S which was codified as Chapter 10 of Title 6 of the Antioch Municipal Code. A copy of the City's Water Conservation Ordinance as defined in the City's Municipal Code and Water Efficient Landscape Ordinance are provided in Appendix H.

8.1 STAGES OF ACTION

This section describes the City's stages of action to be undertaken in response to water supply shortages. Included is an outline of specific water supply conditions that are applicable to each stage. Per California Water Code Section 10632 (a)(1), the City has developed four stages of action to be undertaken in response to water supply shortages, including up to a 50 percent reduction in water supply and an outline of specific water supply conditions which are applicable to each stage. This type of response would be appropriate to a drought, emergency supply outage condition, or other water shortages.

The stages will be implemented during water supply shortages according to shortage level, ranging from 5 percent shortage in Stage I to 50 percent shortage in Stage IV. The stage determination and declaration during a water supply shortage will be made by the Public Works Director. Table 8-1 summarizes the four stages with their corresponding water use reduction objectives and water supply conditions.

- During Stage I, water alert conditions are declared and voluntary water conservation is encouraged.
  - The City maintains an ongoing public information campaign consisting of distribution of literature, speaking engagements, bill inserts, and conservation messages printed in local newspapers and on the City's internet web page.
  - The drought situation is explained to the public and governmental bodies.
  - The City explains other stages and forecasts future actions.
  - Educational programs in area schools are ongoing.
  - Educational information is also available from the City's Customer Service desk.
- During Stage II of a water supply shortage, the shortage is moderate, 10 to 20 percent, and conservation may be voluntary, consist of allotments, and/or include mandatory conservation rules.
  - The severity of actions depends upon the percent shortage.
  - The City aggressively continues its public information and education programs.

— The City asks for 10 to 20 percent voluntary or mandatory water use reductions.
— If necessary, the City also supports passage of drought ordinances.

- During Stage III of a water supply shortage, the shortage is severe, 20 to 35 percent, and conservation consists of allotments and mandatory conservation rules.
  — This phase becomes effective upon notification by the City that water usage is to be reduced by a mandatory percentage.
  — The City would adopt drought ordinances and implements mandatory reductions.
  — Penalties may be imposed for excess use.
  — Water use restriction is put into effect; i.e., prohibited uses can include restrictions on watering during certain daytime hours, excessive watering resulting in gutter flooding, using hoses without a shutoff device, using non-recycling fountains, washing down sidewalks or patios, not repairing leaks, etc.
  — The City monitors production weekly for compliance with necessary reductions. As a result of a customer consistently abusing use, the City would install a flow restrictor at the water meter.
- During Stage IV of a water supply shortage, the shortage is critical, 35 to 50 percent.
  — Conservation consists of allotments and mandatory conservation rules.
  — All steps taken in prior stages are intensified and production is monitored daily for compliance with necessary reductions.

Table 8-1. Retail: Stages of Water Shortage Contingency Plan (DWR Table 8-1)

Stage	Complete Both	
	Percent Supply Reduction[1]	Water Supply Condition
I	5-10%	Minor Drought
II	10-20%	Severe Drought
III	20-35%	Catastrophic Interruption
IV	35-50%	Catastrophic Interruption
[1] One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.		
NOTES: It is CCWD policy to provide a minimum of 85% of City's water demand during a drought.		

As described in Chapter 6, the City is dependent on imported water purchased from the CCWD. Therefore, the CCWD's determination will be critical to implementing the City's WSCP and determining which stage will be implemented. The City will evaluate the CCWD supply reduction and the City's projected reduction in local supplies to determine the total reduction in production and the corresponding needed reduction in demand to be implemented.

8.2 PROHIBITIONS ON END USERS

California Water Code Section 10632 (a)(4) requires mandatory prohibitions against specific water use practices that may be considered excessive during water shortages. The City is currently operating under the State's Water Efficient Landscape Ordinance (WELO), which is included in Appendix H. These regulations address landscape and irrigation plans. In addition, the City has adopted Resolution 89-263, which addresses landscape guidelines for public open space areas within planned developments. Both documents are proactive means of reducing the water demand in the City of Antioch.

If drought conditions warrant mandatory reductions, during Stage II of a water supply shortage, the City may adopt and implement an ordinance for mandatory conservation and water restriction plan. This ordinance may require additional tariffs for the City to enforce the plan. The ordinance may address prohibitions on various wasteful water uses, including, but not limited to, the hose washing of sidewalks and driveways using potable water, cleaning or filling decorative fountains, and allowing plumbing leaks to go uncorrected for more than 72 hours.

On April 1, 2015 Governor Jerry Brown issued Executive Order B-29-15 which prescribed a 25 percent reduction across the state of California with reductions proportional to relative per capita 2013 water usage. In addition, the SWRCB issued Emergency Regulations for Drought Emergency Water Conservation (effective May 12, 2015) which required large urban water suppliers serving more than 3,000 connections to do the following:

- Impose restrictions on outdoor irrigation;
- Notify customers of leaks within the customers control;
- Report on water use monthly; and
- Report on compliance and enforcement

On August 18, 2014, the City Council also adopted prohibitions with 15% conservation measures (Resolution 2014/79). According to this resolution, no person shall use any water provided by the City for a nonessential purpose which includes:

- Permitting water to flow onto a sidewalk, driveway or street, or escape down a gutter, ditch or other service drain;
- Outside watering that results in excessive flooding or runoff into a gutter, drain, walkway or street;
- Using city-furnished water for non-recirculating decorative fountains or filling of decorative lakes or ponds;
- Washing of paved or other hard surface areas, including sidewalks, walkways, driveways, patios and parking areas with city-furnished water;
- Failing to repair a controllable leak of water; and/or
- Using a hose without an automatic shutoff nozzle.

Table 8-2 reports the prohibitions that the agency places on end users in each stage. The City's prohibitions on end users for each of the five categories is described in the below sections.

Table 8-2. Retail Only: Restrictions and Prohibitions on End Users (DWR Table 8-2)

Stage	Restrictions	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
2	Landscape - Restrict or prohibit runoff from landscape irrigation		Yes
3	Landscape - Limit landscape irrigation to specific times	Limit 9 AM to 5PM	Yes
3	Landscape - Limit landscape irrigation to specific days	Limit more than 3 days per week	Yes
3	Landscape - Other landscape restriction or prohibition	Prohibit sprinklers during and 2 days after rain	Yes
3	CII - Lodging establishment must offer opt out of linen service		Yes
3	CII - Restaurants may only serve water upon request		Yes
2	Water Features - Restrict water use for decorative water features, such as fountains		Yes
2	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner		Yes
2	Other - Require automatic shut of hoses		Yes
3	Other - Prohibit use of potable water for construction and dust control		Yes
2	Other - Prohibit use of potable water for washing hard surfaces	Prohibit cleaning of streets, sidewalks, walkways, parking areas, patios, porches	Yes
2	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water		Yes

8.2.1 Landscape Irrigation

In order to comply with Executive Order B-29-15, the State requires all of the City's customers to reduce their water usage by 28 percent, with a focus on outdoor irrigation. Table 8-2 identifies the City's proposed mandatory irrigation restrictions and fines which includes only allowing customers to irrigate three days per calendar week. The days of the week are determined by odd/even house addresses.

8.2.2 Commercial, Industrial, and Institutional (CII)

The City has implemented new prohibitions on commercial, industrial, and institutional (CII) water use to its Municipal Code in response to Executive Order B-28-15. This includes the serving of drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cades, cafeterias, bars, or other public places where food or drink are served and/or purchased. In addition, operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily and a notice shall be prominently displayed in each bathroom.

8.2.3 Water Features and Swimming Pools

Currently, the City has not implemented any prohibitions on water features that involve swimming pools or spas in its Municipal Code.

8.2.4 Defining Water Features

The City limits the use of water for non-recirculating decorative fountains or for filling decorative lakes or ponds, as shown in Table 8-2.

8.2.5 Other

Other prohibitions that the City has implemented in order to reduce water demand is requiring leak repair, requiring automatic shut off hoses, prohibiting vehicle washing, and prohibiting the washing of hard surfaces. These prohibitions, along with their penalties and stage, are listed in Table 8-2.

8.3 PENALTIES, CHARGES, OTHER ENFORCEMENT OF PROHIBITIONS

Section 10632 (a)(6) of the California Water Code requires a water shortage contingency analysis to include penalties or charges for excessive water use, where applicable. The City can issue Administrative Citations for $100, $200, and $500 for each subsequent violation of the Antioch Municipal Code. The City's Code Enforcement and Public Works Staff carry out enforcement through courtesy notices, abatement letters, and citations for water waste violations.

Currently, the City's tier 2 water rate structure imposes an excess use penalty per 100 cubic feet of water used in excess of the applicable allocation during each billing period. Repeated violations of unauthorized water use will result in discontinuance of water service. The City's second tier rates are always in effect, regardless of drought conditions.

8.4 CONSUMPTION REDUCTION METHODS

Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply. California Water Code Section 10632 (a)(5) requires the water supplier to provide consumption reduction methods in the most restrictive stages of a water shortage. The City will use the consumption reduction methods proposed in Table 8-4.

Table 8-4. Retail Only: Stages of Water Shortage Contingency Plan – Consumption Reduction Methods (DWR Table 8-3)

Stage	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference
1	Expand Public Information Campaign	Provide educational programs
1	Improve Customer Billing	Provide water conservation kits
1	Provide Rebates on Plumbing Fixtures and Devices	Provide plumbing fixture replacements
3	Increase Water Waste Patrols	Implement excess use penalties and flow restrictions
1	Other	Demand reduction program
2	Other	Voluntary rationing
2	Other	Use prohibitions
2	Other	Restrict for only priority uses
3	Other	Mandatory rationing
3	Other	Per capita allotment by customer type

The CCWD, the City's wholesaler, provides several rebate and incentive programs to help customers improve their water use efficiency and therefore reduce water consumption. The City's residents are eligible to participate in these programs created by the CCWD. These programs include:

- Residential High-Efficiency Clothes Washer Rebates;
- Water-Efficient Landscape Rebates;
- Commercial High-Efficiency Clothes Washer Rebates;
- Smart Sprinkler Timer Rebates; and
- Commercial Irrigation Equipment Rebates.

8.5 DETERMINING WATER SHORTAGE REDUCTIONS

California Water Code Section 10632 (a)(9) requires the water supplier to develop a mechanism for determining actual reductions in water use in the course of carrying out the urban water supply shortage contingency analysis. Under normal water supply conditions, water production figures are recorded daily within and monitored by the Superintendent. Totals are reported monthly and are incorporated into water supply reports. The City maintains extensive water use records on individual customer accounts. Exceptionally high usage is identified at meter reading time by the City's electronic meter reading management system. During all stages of water shortages, daily production figures are reported to and monitored by the City's Superintendent. These accounts are investigated for potential water loss or abuse problems.

The City evaluates the effectiveness of its water conservation program based on metered water use data. Monitoring involves determining the per capita water use for residential users and the water use per account for non-residential customer categories.

8.6 REVENUE AND EXPENDITURE IMPACTS

Section 10632 (a)(7) of the California Water Code requires an analysis of the impacts of each of the actions taken for conservation and water restriction on the revenues and expenditures of the water supplier. The City may establish memorandum accounts to track expenses and revenue shortfalls caused by both mandatory rationing and voluntary conservation efforts. The City may implement a surcharge to recover revenue shortfalls recorded in their drought memorandum accounts. Tables 8-5 and 8-6 display the Components of Revenue and Expenditure Impacts and summary of effects.

Table 8-5. Proposed Measures to Overcome Revenue

Name of Measures	Summary of Effects
Development of Reserves	There is a reserve policy (contingency fund) in place to help offset expenditure impacts during times of emergency
Surcharge	The City may implement a surcharge to recover revenue shortfalls recorded in its drought memorandum accounts

Table 8-6. Proposed Measures to Overcome Expenditure Impacts

Name of Measures	Summary of Effects
Development of Reserves	There is a reserve policy (contingency fund) in place to help offset expenditure impacts during times of emergency

8.7 RESOLUTION OR ORDINANCE

As a requirement of the UWMPs, City is required to develop a water shortage contingency resolution or ordinance for submittal with the UWMP. Appendix H includes the Water Conservation Ordinance 2029-C-S.

8.8 CATASTROPHIC SUPPLY INTERRUPTION

The Water Code Section 10632 requires actions to be undertaken by the water supplier to prepare for and implement during a catastrophic interruption of water supplies. A catastrophic event that constitutes a proclamation of a water shortage would be any event, either natural or manmade, that causes a severe shortage of water, synonymous with or with greater severity than the Stage III or Stage IV water supply shortage conditions. Facilities are inspected annually for earthquake safety. Auxiliary generators and improvements to the water storage facilities to prevent loss of these facilities during an earthquake or any disaster causing an electric power outage have been budgeted for and installed as part of the annual construction process. Table 8-7 is a summary of items discussed regarding the preparation actions for a catastrophe.

Table 8-7. Preparation Actions for a Catastrophe

Summary of Actions
• Determine what constitutes a proclamation of water shortage • Stretch existing water shortage • Obtain additional water supplies • Determine the funding source • Contact and coordinate with other agencies • Create an Emergency Response Team/Coordinator • Create a catastrophe preparedness plan • Put employees/ contractors on call • Develop methods to communicate with the public • Develop methods to prepare for water quality interruptions

8.9 MINIMUM SUPPLY NEXT THREE YEARS

As an UWMP requirement, all water agencies are required to provide an estimate of the minimum water supply available during each of the next three water years, as shown in Table 8-8. This estimate reflects the combined availability of all water sources and assumes the same hydrology that was noted in the historical multiple-dry year period (Chapter 7, Section 7.3).

Table 8-8. Retail: Minimum Supply Next Three Years (DWR Table 8-4)

	2016	2017	2018
Available Water Supply	9,275	6,682	6,682
NOTES: Volumes are in MG.			

CHAPTER 9
Demand Management Measures

This chapter describes the City's historical and existing water conservation program, status of implementation of 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 were required to document a water supplier's progress in implementing fourteen specific DMMs. In 2014, Assembly Bill 2067 simplified, clarified, and updated reporting requirements for DMMs. Starting with this 2015 UWMP, focus has turned away from detailed descriptions of each of the fourteen 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 fourteen to six (plus an "other" category). A narrative description of the status of the DMMs and how the DMMs will help the water supplier achieve its SB X7-7 water use targets is required. Detailed data are not required.

Members of the California Urban Water Conservation Council (CUWCC) may include their reporting in the UWMP, but a narrative is also required.

9.1 WATER CONSERVATION PROGRAM OVERVIEW

The City conducts an ongoing water conservation program. As a raw water customer of CCWD, all Antioch customers are eligible for conservation programs provided by CCWD. These services were not regularly marketed to Antioch customers until 2000. CCWD implements all DMMs and tracks most expenses and savings associated with the DMMs. The City assists in the marketing of the programs and provides staffing assistance for some DMMs. This section presents a description of each DMM that is currently being implemented or scheduled for implementation, a schedule of implementation, and a method to evaluate effectiveness. The Memorandum of Understanding (MOU)-defined DMMs are generally recognized as standard definitions of water conservation measures. The CUWCC administers the MOU, however, currently, the City is not a MOU signatory. Appendix I includes the City's DMM implementation reports for 2011 through 2015.

9.2 DEMAND MANAGEMENT MEASURES

The six DMMs required to be discussed in the 2015 UWMP include the following:

- Water waste prevention ordinances;
- Metering;
- Conservation pricing;
- Public education and outreach;
- Programs to assess and manage distribution system real loss; and
- 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 over the previous five years and the planned implementation to achieve the water use targets required by SB X7-7 (see Chapter 5 SB X7-7 Baselines and Targets).

9.2.1 Water Waste Prevention Ordinances

Water waste prohibition is an ongoing component of the City's water conservation program. The City has adopted a water waste prohibition ordinance included in its Municipal Code. The City's most current water waste ordinance is as follows:

> *§ 6-5.10 WASTE OF WATER.*
>
> *No person shall misuse or waste water. Any person misusing or wasting water shall be guilty of an infraction. The term MISUSE or WASTE shall mean the use of water which, to a reasonable person, is clearly in excess of the need or intended purpose. MISUSE or WASTE may also mean the use of water in excess of quantity standards imposed during any water shortage emergency declared by the City Council. In the event of any misuse or waste of water, in addition to criminal prosecution, the Finance Department may install flow restrictors at the premises where misuse or waste has occurred, following procedures established for such installation, which shall include at least one warning notice to the consumer prior to such installation. ('66 Code, § 6-5.10) (Ord. 76-A, passed 12-17-23; Am. Ord. 817-C-S, passed 7-11-91) Penalty, see § 6-5.33*

The majority of the City's cases of water wasting involve irrigation. The City refers all violators to take advantage of the CCWD's water conservation programs and assistance. The City's Code Enforcement and Public Works Staff carry out enforcement through courtesy notices, abatement letters, and citations for water waste violations. Through 2015, the City has issued one citation for water wasting violations, as compliance is typically reached with courtesy notices and abatement letters. This is an under reporting of the efforts as most instances do not reach the code enforcement level of involvement. Currently, the City does not include water softener checks in the home water survey nor does it include information about Demand Initiated Regenerating and exchange-type water softeners in education efforts.

The implementation of this DMM is ongoing. Implementation of this DMM is expected 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.

9.2.2 Metering

The City has implemented this program fully. The City requires meters for all new connections; customers are billed by volume-of-use. The City has no unmetered accounts. The City also meters its internal uses such as park and landscape median irrigation. The City has not conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters. And the City has not tracked the number of CII accounts with mixed-use meters and the number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters so related data are unavailable.

Implementation of this DMM is expected to help the City achieve its water use targets by providing accurate water use information to the customer and the City.

9.2.3 Conservation Pricing

Effective July 1, 2015, the City adopted a residential water rate tier structure based on two components:

1. A monthly meter service charge which varies by meter size; and
2. A quantity rate for actual metered residential water usage in each of four elevation zones. Quantity rates increase for higher elevation zones as a result of additional electricity costs associated with pumping water to higher elevations.

Most single family customers have a ⅝ x ¾-inch meter. Average monthly water use for single family customers has decreased from 15 hundred cubic feet (HCF) (about 370 gallons per day) to 13 HCF (about 320 gallons per day). In order to promote continued water conservation, and to penalize wasteful consumption, two-tier quantity rates have been developed for single family customers.

The Tier 1 quantity rate applies to water use equal to or below average monthly water use. The Tier 2 quantity rate applies to above average water use. All other customers (those shown as "Non- Single Family") have a uniform increased quantity rate that applies to the applicable elevation zone.

Table 9-1 provides a description of the City's conservation pricing rate structure.

Table 9-1. City of Antioch's Rate Structure

Service Category	2015-16	2016-17	2017-18	2018-19	2019-20
Quantity Rates, $/HCF					
Non-Single Family					
Zone I	$2.99	$3.24	$3.73	$4.05	$4.44
Zone II	$3.08	$3.33	$3.83	$4.16	$4.55
Zone III	$3.15	$3.41	$3.92	$4.25	$4.65
Zone IV	$3.32	$3.59	$4.10	$4.45	$4.86
Single Family					
Tier 1	*0-13 HCF*	*0-13 HCF*	*0-12 HCF*	*0-12 HCF*	*0-12 HCF*
Zone I	$2.53	$2.74	$3.17	$3.45	$3.78
Zone II	$2.62	$2.83	$3.27	$3.56	$3.89
Zone III	$2.69	$2.91	$3.36	$3.65	$3.99
Zone IV	$2.86	$3.09	$3.54	$3.85	$4.20
Tier 2	*0-13 HCF*	*0-13 HCF*	*0-12 HCF*	*0-12 HCF*	*0-12 HCF*
Zone I	$4.19	$4.53	$5.24	$5.68	$6.22
Zone II	$4.28	$4.62	$5.34	$5.79	$6.33
Zone III	$4.35	$4.70	$5.43	$5.88	$6.43
Zone IV	$4.52	$4.88	$5.61	$6.08	$6.64
Meter Service, $/meter-month					
⅝ x ¾-inch	$17.50	$18.80	$21.20	$22.90	$24.40
1-inch	$39.30	$42.50	$47.70	$52.00	$55.00
1½-inch	$74.00	$81.00	$90.00	$98.00	$105.00
2-inch	$117.00	$127.00	$142.00	$155.00	$165.00
3-inch	$217.00	$235.00	$264.00	$287.00	$305.00
4-inch	$359.00	$389.00	$437.00	$475.00	$506.00
6-inch	$715.00	$775.00	$870.00	$946.00	$1,008.00
8-inch	$1,142.00	$1,237.00	$1,390.00	$1,512.00	$1,610.00
10-inch	$1,640.00	$1,777.00	$1,997.00	$2,171.00	$2,312.00
12-inch	$2,352.00	$2,548.00	$2,864.00	$3,113.00	$3,315.00

Source: Antioch City Council Report: Water and Sewer Charges, May 12 2015
HCF = hundred cubic feet (748 gallons)

Utility fee calculations were based on the cost of operation and maintenance expenses (including labor, utilities, supplies and materials), capital expenditures for infrastructure, and adequate reserves for meeting capital and operational needs. This rate increase addresses the rising costs of treating water as well as maintaining water distribution and wastewater collection systems and the need to meet increasing mandates from both Federal and State agencies.

Implementation of this DMM is expected to help the City achieve its water use targets by ensuring water customers pay the true cost of water and to adequately fund water system operations and maintenance, including repair and replacement programs, and water conservation programs.

9.2.4 Public Education and Outreach

Public information is an ongoing component of the City's water conservation program. Activities incorporated in this program include bill inserts, City website postings, brochures, participation in media events, and speaker's bureau. In addition, the City is a participating agency in the Contra Costa County Green Business Program. The Green Business Program is a partnership of environmental agencies, professional associations, waste management agencies, and utilities, working together to recognize and assist businesses and government agencies that operate in an environmentally friendly manner.

In addition, the City has made the WTP available for Antioch schools to come out and tour the facility as an educational fieldtrip. These tours involve an age-appropriate guided WTP tour. Students receive booklets and conservation material when they visit the plant. This program has primarily been used by 3rd grade classes. However, the City has not tracked the participation in this program over the years. Field trips have been ongoing since 2001 with the exception of during construction activities and times of elevated water quality concerns.

The City provides public information and school education programs on water conservation and other water issues on an ongoing, year-round basis. As with most public education and outreach programs, the direct effectiveness of these programs are difficult to quantify.

Implementation of this DMM is expected to help the City achieve its water use targets by educating water users about the importance of improving water use efficiency and avoiding water waste.

9.2.5 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. A leak detection program typically consists of both visual inspection as well as audible inspection. Visual inspection includes the inspection of distribution system appurtenances (e.g., fire hydrants, valves, meters, etc.) to identify obvious signs of leakage. To perform audible leak detection, specialized electronic listening equipment is used to detect the sounds associated with distribution system leakage. This process allows the agency to pinpoint the location of suspected leaks.

Because the City's system losses percentage is so low, the City has no ongoing program for leak detection. In the event a leak does occur, City Water Distribution Staff perform the repairs.

The City has an ongoing water main replacement program. On a yearly basis it budgets for removing and replacing older mains and valves. This activity helps substantially to reduce leakage potential. From 2011 through 2015, the City spent about $2.6 million on water main replacement. The 2015-2020 Capital Improvement budget includes $800,000 per year for similar work. Implementation of this DMM is expected to help the City achieve its water use targets by proactively replacing aging facilities and quickly repairing pipeline leaks.

9.2.6 Water Conservation Program Coordination and Staffing Support

The conservation coordinator is an ongoing component of the City's water conservation program. The conservation coordinator is responsible for implementing and monitoring the City's water conservation activities. A conservation coordinator has been in place since July of 2000. The position title is Environmental Resource Coordinator. The Environmental Resource Coordinator is a full time staff person who devotes approximately one third of available time to water conservation. Regional conservation work is done through a partnership with CCWD. There is no additional staff provided by the City; however, meter readers and other field workers do some leak checking and initial outreach and customer service representatives often provide conservation and leak detection advice to customers.

The implementation of this DMM started in 2000 and is ongoing. Water savings from this DMM cannot be directly quantified. Effectiveness of this DMM will be evaluated by the success of the City's water conservation program.

Implementation of this DMM is expected to help the City achieve its water use targets by making water conservation and implementation of the City's water conservation program a priority.

9.3 OTHER DEMAND MANAGEMENT MEASURES

In addition to the six DMMs described above, the City also implements the following programs:

- Residential conservation programs;
- A large landscape irrigation conservation program; and
- A commercial, industrial, institutional customer's conservation program.

These programs are described below.

9.3.1 Residential Conservation Programs

Water survey programs for single and multi-family residential connections were implemented in 2000. The Single-Family (SF) Residential Survey Program offers free on-site evaluations of home water use. The survey takes between one to two hours to complete, and includes a thorough review of both interior and landscape water uses; however, the primary focus of the survey is landscape water use. The surveyor inspects each irrigation station, and notes specific problems and suggested repairs or improvements. Precipitation tests are conducted on individual sprinkler stations, and a site specific monthly irrigation schedule is prepared. The schedule is programmed into the controller and the customer is taught how to adjust the timer. After participating in the program, customers are sent four (4) post cards each year to remind them to adjust their watering schedules

and to check their irrigation systems. The Multi-Family (MF) Residential Survey Program targets apartment complexes and other multi-family customers. The program is marketed to the highest water-using customers and is implemented in conjunction with the MF Ultra-Low Flow Toilet (ULFT) Replacement Program. During the survey, plumbing fixtures are flow tested and high-efficiency fixtures are installed or provided to replace high-volume fixtures, such as showerheads, faucet aerators and toilet flappers. Each customer receives a report on the completed survey, which lists the number and location of leaks found, an inventory of toilets by flush volume, and a list of showerheads, aerators or flappers installed. The customer also receives information about other CCWD programs, such as the ULFT Distribution Program, Large Landscape Survey Program and Commercial Clothes Washer Program. In addition, the City advertises the water audit program on the City website: http://www.ci.antioch.ca.us/citygov/publicworks/water/default.htm.

The CCWD implements the SF and MF Residential Survey Program while the City is responsible for marketing and conducts some of the single family surveys. Table 9-2 lists the number of surveys conducted in Antioch from 2011 to 2015 for single-family and multi-family units. CCWD has not provided the City with costs related to this program.

Table 9-2. Residential Plumbing Retrofit Surveys

	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Single-family surveys	17	75	75	21	28
Multi-family surveys	0	0	0	0	0

Plumbing retrofit of existing residential accounts consists of providing low flow showerheads, faucet aerators, and toilet leak detection tablets to customers. The City has no enforceable ordinance in effect in the service area requiring the replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts. As of yet, the City has not achieved the 75 percent saturation requirement for single-family and multi-family housing units has not yet been satisfied. From 2011 to 2015, the CCWD retrofit program provided a total of approximately 1,241 and 102 water efficient devices (low flow showerheads and faucet aerators) to single-family and multi-family units within the City, respectively. CCWD, not the City, tracks the distribution and cost of low-flow devices to the single-family and multi-family units using Microsoft® Access. In addition, the California Youth Energy Services (CYES) has also provided water efficient devices (low flow showerheads and faucet aerators) to the City's community.

The City markets the retrofit program in conjunction with the residential survey program. The City sends marketing letters in batches by meter reading routes. It selects neighborhoods to receive the marketing letters if there is a history of over irrigation in the neighborhood or if participation in the retrofit program needs to be increased; routes with pre-1992 homes are targeted. Marketing letters are sent to all households in the selected route that have a monthly consumption of over 750 gallons per day (GPD) (30 units) or more per month. This has been effective in targeting the City's larger consumers where the most water can be conserved. Marketing efforts are tracked so that each route is marketed at least once every two to three years. Routes where over consumption occurs receive sent letters every one to two years. The City has realized close to a five percent response rate to marketing letters on average since 2001.

The implementation of the plumbing retrofit program started in 1991 and is ongoing. Table 9-3 lists the number of devices distributed to single-families and multi-families through the CCWD retrofit program, as well as the number of devices distributed through the CYES program. These devices includes low flow showerheads and faucet aerators.

Table 9-3. Distributed Residential Plumbing Retrofit Devices[(a)]

	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Single-family devices	69	363	45	376	388
Multi-family devices	0	0	0	0	102
CYES devices	0	193	109	143	28
(a) Devices are low flow showerheads and faucet aerators.					

CCWD implements high efficiency washing machine rebate programs. CCWD, in coordination with six other water agencies, implemented a Bay Area Regional Clothes Washer Rebate Program. CCWD's program has offered rebates from $50 to $100 to residential customers who purchase clothes washers with a minimum water use efficiency, or water factor. The program is marketed primarily through the retail appliance stores. In addition, the City markets these programs though emails and billing statement brochures. PG&E also offers rebates of $35 and $75 for high-efficiency washers. To qualify for these rebates the water heater must be heated by natural gas distributed to the installation address by PG&E or electricity distributed to the installation address by PG&E. Water heaters that use propane do not qualify. For a $35 rebate (Level 1), the clothes washer must have a Modified Energy Factor (MEF) of 1.42-1.59 and a Water Factor (WF) of 9.5 or lower. For a $75 rebate (Level 2), the clothes washer must have a MEF of 1.60 or greater and a WF of 8.5 or lower (PG&E, 2005).

The implementation of the high efficiency washing machine rebate program started in 2000 t and ended in January 2014. The number of rebates, by fiscal year (July 1 through June 30), is provided in Table 9-4. Because the high efficiency washing machine rebate program ended in January 2014, the number of rebates reported for Fiscal Year 2015 is the number of rebates through December 31, 2014.

Table 9-4. High Efficiency Washing Machine Rebates

	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Rebates paid	713	600	551	435	350

CCWD implements a residential toilet replacement program, while the City assists in program marketing. CCWD offers both single-family and multi-family residential customers toilet replacement rebates. The program was based on ULFTs until 2007, when high efficiency toilets (HETs) replaced ULFTs. The program is marketed directly to customers with homes built prior to 1992 through the survey programs. The program is also marketed through fliers distributed in the water bills. Eligible customers receive a voucher and pick up their new HET at a specific vendor who contracts with CCWD. Customers are responsible for installation and CCWD

conducts random inspections to insure proper installation. Multi-family customers who replace more than six toilets receive free delivery. The Multi-family program is marketed at least one time each year to a Property Managers Group that meets monthly with the Police Department and Neighborhood Improvement Services staff. Prior to the HET Distribution Program, CCWD offered rebates to single-family customers as an incentive to install ULFTs.

The implementation of the residential toilet replacement program started in 1994 with ULFTs and ended in January 2014. The number of HET rebates and installs performed in the City for single and multi-family units, by fiscal year, is provided in Table 9-5. Because the residential toilet replacement program ended in January 2014, the number of rebates reported for Fiscal Year 2015 is the number of rebates through December 31, 2014. In August 2015 the State rebate promotion was added to this program.

Table 9-5. Residential Toilet Replacement Rebates

	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
# of single-family ULFT/HET rebates	441	229	223	340	280
# of multi-family ULFT/HET rebates	98	160	6	7	20

Implementation of this DMM is expected to help the City achieve its water use targets by reducing the amount of water consumed by its residential customers.

9.3.2 Large Landscape Irrigation Conservation Program

The Landscape Water Budget Program is directed at those commercial and multi-family sites with dedicated irrigation water accounts. Water budgets are prepared using real-time local ET_o data and actual landscape area measurements obtained through an aerial photo. The data are integrated into a detailed water budget equation, which integrates monthly landscape coefficients, irrigation efficiency, and real-time ET_o. Water budget site reports are prepared comparing the water budget to actual water use. The program provides participating customers with water budget site reports tailored specifically to their properties. These reports enable the customer to adjust their water use to reflect seasonal weather changes and, therefore, control the costs of their water bills. CCWD implements this program; the City markets the program. Currently, the City does not provide water use notices to accounts with budgets each billing cycle, nor has it developed a marketing/targeting strategy for landscape surveys. Elements of the current Landscape Surveys are as follows:

- Irrigation system check;
- Distribution uniformity analysis;
- Review/develop irrigation schedules;
- Measure landscape area;

- Measure total irrigable area;
- Provide customer report/information; and
- CCWD also tracks survey offers and results as well as provides follow-up surveys for previously completed surveys.

The implementation of this DMM started in 2003 and is ongoing. CCWD implements this program and accrues program expenditures. Table 9-6 provides the number of landscape audits completed. CCWD has not provided the City with costs related to this program.

Table 9-6. Large Landscape Irrigation Program Activities

	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Budgets developed	0	0	0	0	0
Landscape audits completed	0	0	1	2	0
Follow-up visits	0	0	0	0	0
Expenditures, dollars	7,188	0	0	1,780	0

Implementation of this DMM is expected to help the City achieve its water use targets by preventing planting of landscaping that would misuse or waste water.

9.3.3 Commercial, Industrial, Institutional Customers Conservation Program

CCWD implements this program while the City markets the program. The CII survey program targets a variety of commercial, institutional and industrial customers. Individual water-using devices are inspected, and customers receive a report listing improvements that can be made to the equipment and to the maintenance of that equipment. Rebates are offered as an incentive to upgrade to more efficient equipment. The implementation of this DMM started in 2004 and is ongoing. The table below lists the on-site surveys completed and rebates provided by this program.

In addition to the existing survey program, CCWD provides CII toilet replacement. The program was based on ULFTs until 2007, when HETs replaced ULFTs. The program targets various commercial and institutional customers through several means: direct mail, bill inserts, bill message, newsletter, telephone, website, trade publications, trade shows, or through the CII Survey Program. The most effective form of marketing was found to be direct mailing. Though, bill inserts and bill messages are inexpensive, they have resulted in modest participation. Customers are targeted based on consumption ranking, potential savings, oldest meter, CII sector or subsector, and CII toilet replacement study subsector targeting. Repeated targeting seems to be the most effective method. CCWD keeps and maintains customer participant information and is willing to share this information for use in a CUWCC study. Customers are offered a rebate of 100 percent of the material cost up to $150 per HET. In addition, CCWD negotiated with local plumbing wholesalers to offer select high quality toilets at wholesale prices to any participant. This assures that toilets installed will have long-term savings and customer satisfaction. The implementation of this DMM started in 2000 and is ongoing. Table 9-7 lists the number of CII toilet replacements.

Table 9-7. CII Program Activities

	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
On-site surveys completed	1	0	0	3	1
Rebates provided	0	0	0	0	0
# of HET replacements	9	8	0	0	10

Implementation of this DMM is expected to help the City achieve its water use targets by tracking water use of large industrial customers and alerting the customer to substantial changes in water use that could indicate the need for greater water use awareness within the industrial facility.

9.4 PLANNED IMPLEMENTATION TO ACHIEVE WATER USE TARGETS

Water conservation measures are a vital part of the City's overall plan to achieve, reliable, high quality, and cost-effective water supply for its customers. The City assists CCWD in the marketing of programs and provides staffing assistance for some DMMs that include but are not limited to the following: public information outreach, residential water use surveys, high efficiency toilet distribution, and device incentive rebate programs.

9.5 MEMBERS OF THE CALIFORNIA URBAN WATER CONSERVATION COUNCIL

In 1991 (amended September 16, 1999), a 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 (BMPs) and make a cooperative effort to reduce the consumption of California's water resources. This MOU is administered by the CUWCC. The City is not currently a signatory of the MOU and is therefore not a member of CUWCC.

However, the City realizes the importance of the BMPs to ensure a reliable future water supply. The City is committed to implementing water conservation and water recycling programs to maximize sustainability in meeting future water needs for its customers.

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This chapter provides information regarding the notification, public hearing and adoption of the Plan.

10.1 INCLUSION OF ALL 2015 DATA

Because 2015 is the first compliance year for SB X7-7, the 2015 UWMPs must contain data through the end of 2015. If a water supplier bases its accounting on a fiscal year (July through June) the data must be through the end of the 2015 fiscal year (June 2015). If the water supplier bases its accounting on a calendar year, the data must be through the end of the 2015 calendar year (December 2015).

As indicated in Chapter 1, the City uses a calendar year for water supply and demand accounting, and therefore this 2015 UWMP includes data through December 2015.

10.2 NOTICE OF PUBLIC HEARING

The City provided 60-day notice of the preparation of its 2015 UWMP, and notice of the 2015 UWMP Public Hearing to the cities and counties listed in Table 10-1.

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

City Name	60 Day Notice	Notice of Public Hearing
City of Antioch	☑	☑
County Name	**60 Day Notice**	**Notice of Public Hearing**
Contra Costa County	☑	☑

Other agencies notified included the following:

- Contra Costa Water District
- Delta Diablo
- City of Pittsburg
- City of Brentwood

Public hearing notifications for adopting the Plan were published in the local newspaper and posted at City facilities. Copies of the published Notice of Preparation and Notice of Public Hearing are included in Appendix D.

10.3 PUBLIC HEARING AND ADOPTION

The City has encouraged community and public interest involvement in the Plan update through the use of public notices and web-based communication.

The public hearings provided an opportunity for all City water users and the general public to become familiar with the Plan and ask questions about its water supply, in addition to the City's continuing plans for providing a reliable, safe, high-quality water supply. The adoption, implementation and economic impact of revised per capita water use targets (described in Chapter 5) was also discussed. Copies of the draft Plan were made available for public inspection at the City Clerk's offices and the Antioch Library.

This Plan was adopted by the City Council on May 24, 2016. A copy of the adopted resolution is provided in Appendix K.

10.4 PLAN SUBMITTAL

A copy of this 2015 UWMP will be submitted to DWR within 30 days of adoption and by July 1, 2016. The adopted 2015 UWMP will be submitted electronically to DWR using the WUEdata submittal tool. A CD or hardcopy of the adopted 2015 UWMP will also be submitted to the California State Library.

No later than 30 days after adoption, a copy of the adopted 2015 UWMP, including the Water Shortage Contingency Plan, will be provided to the cities and counties to which the City provides water.

10.5 PUBLIC AVAILABILITY

No later than 30 days after submittal to DWR, copies of this Plan will be available at local public libraries and City offices for public review during normal business hours. An electronic copy of this Plan will also be available for review and download on the City's website: http://www.ci.antioch.ca.us/.

10.6 PLAN IMPLEMENTATION

This Plan will be the source document for any Senate Bill 610 Water Supply Assessments or Senate Bill 221 Water Supply Verifications required for any proposed projects between 2016 and 2020 that are subject to the CEQA and would demand an amount of water equivalent or greater than the amount of water required by a 500 dwelling unit project. This Plan will also be the source document for water demand projections and water supply availability for an update to the City's Water Master Plan, which was last updated in August 2014. Lastly, this Plan will provide guidance and direction on development of new local supplies and implementation of water conservation programs and recycled water expansion to meet the requirements of SB X7-7.

10.7 AMENDING AN ADOPTED UWMP

If the City amends its 2015 UWMP, copies of amendments or changes to the plans will be submitted to DWR, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

APPENDIX A

Legislative Requirements

- California Water Code – Urban Water Management Planning
- California Water Code – Sustainable Water Use and Demand Reduction

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California Water Code
Urban Water Management Planning

California Water Code Division 6, Part 2.6.
Chapter 1. General Declaration and Policy §10610-10610.4
Chapter 2. Definitions §10611-10617
Chapter 3. Urban Water Management Plans
Article 1. General Provisions §10620-10621
Article 2. Contents of Plans §10630-10634
Article 2.5. Water Service Reliability §10635
Article 3. Adoption And Implementation of Plans §10640-10645
Chapter 4. Miscellaneous Provisions §10650-10656

Chapter 1. General Declaration and Policy

SECTION 10610-10610.4

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

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

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

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

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

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

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

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

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

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

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

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

10610.4. The Legislature finds and declares that it is the policy of the state as follows:

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

(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.

(c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

Chapter 2. Definitions

SECTION 10611-10617

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

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

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

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

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

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses,

reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

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

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

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

Chapter 3. Urban Water Management Plans

Article 1. General Provisions

SECTION 10620-10621

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

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

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

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

(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that

share a common source, water management agencies, and relevant public agencies, to the extent practicable.

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

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

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

(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) 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).

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

Article 2. Contents of Plan

SECTION 10630-10634

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

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

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

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

water available to the supplier, all of the following information shall be included in the plan:

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

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

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

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

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

(A) An average water year.

(B) A single-dry water year.

(C) Multiple-dry water years.

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

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

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

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.

(G) Sales to other agencies.

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

(I) Agricultural.

(J) Distribution system water loss.

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

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

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

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

(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following:

(i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections.

(ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.

(f) 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) 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 (B) of paragraph (1), and a narrative description of its distribution system asset management and wholesale supplier assistance programs.

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

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

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

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

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

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

10631.2. (a) In addition to the requirements of Section 10631, an urban water management plan may, but is not required to, include any of the following information:

(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.

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

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

(3) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if the urban water supplier has

submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the water demand management measures. The supplier may request grant or loan funds to implement the water demand management measures to the extent the request is consistent with the eligibility requirements applicable to the water management funds.

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

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

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

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

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

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

(i) Compliance on an individual basis.

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

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

(3) The department shall not deny eligibility to an urban water supplier in compliance with the requirements of this section that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the water demand management measures described in Section 10631.

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

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

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

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

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

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

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

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

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

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

(5) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are

appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Article 2.5. Water Service Reliability

SECTION 10635

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

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

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

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

Article 3. Adoption and Implementation of Plans

SECTION 10640-10645

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630). The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

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

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

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

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

10644. (a) (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) (1) Notwithstanding Section 10231.5 of the Government Code, the department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part.

The report prepared by the department shall identify the exemplary elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has submitted its plan to the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

(2) A report to be submitted pursuant to paragraph (1) shall be submitted in compliance with Section 9795 of the Government Code.

(c) (1) For the purpose of identifying the exemplary elements of the individual plans, the department shall identify in the report water demand management measures adopted and implemented by specific urban water suppliers, and identified pursuant to Section 10631, that achieve water savings significantly above the levels established by the department to meet the requirements of Section 10631.5.

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

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

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

Chapter 4. Miscellaneous Provisions

SECTION 10650-10656

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

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

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

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

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

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

10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the "Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.

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

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

(commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

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California Water Code
Sustainable Water Use and Demand Reduction

California Water Code Division 6, Part 2.55.

Chapter 1. General Declarations and Policy §10608-10608.8
Chapter 2. Definitions §10608.12
Chapter 3. Urban Retail Water Suppliers §10608.16-10608.44
Chapter 4. Agricultural Water Suppliers §10608.48
Chapter 5. Sustainable Water Management §10608.50
Chapter 6 Standardized Data Collection §10608.52
Chapter 7 Funding Provisions §10608.56-10608.60
Chapter 8 Quantifying Agricultural Water Use Efficiency §10608.64

Chapter 1. General Declarations and Policy

SECTION 10608-10608.8

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(k) Advance regional water resources management.

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

(2) Because an urban agency is not required to meet its urban water use target until 2020 pursuant to subdivision (b) of Section 10608.24, an urban retail water supplier's failure to meet those targets shall not establish a violation of law for purposes of any state administrative or judicial proceeding prior to

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

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

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

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

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

Chapter 2 Definitions

SECTION 10608.12

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(A) Metered.

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

(C) Treated to a minimum tertiary level.

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

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

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

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

(2) The use of recycled water.

(3) The desalination of brackish groundwater.

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

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

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

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

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

Chapter 3 Urban Retail Water Suppliers

SECTION 10608.16-10608.44

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

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

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

(2) It is the intent of the Legislature that the urban water use targets described in paragraph (1) cumulatively result in a 20-percent reduction from the baseline daily per capita water use by December 31, 2020.

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

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

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

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

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

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

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

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

(A) Consider climatic differences within the state.

(B) Consider population density differences within the state.

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

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

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

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

(c) If the department adopts a regulation pursuant to paragraph (4) of subdivision (b) that results in a requirement that an urban retail water supplier achieve a reduction in daily per capita water use that is greater than 20 percent by December 31, 2020, an urban retail water supplier that adopted the method

described in paragraph (4) of subdivision (b) may limit its urban water use target to a reduction of not more than 20 percent by December 31, 2020, by adopting the method described in paragraph (1) of subdivision (b).

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

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

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

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

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

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

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

(2) The department shall post the methodologies and criteria developed pursuant to this subdivision on its Internet Web site, and make written copies available, by October 1, 2010. An urban retail water supplier shall use the methods developed by the department in compliance with this part.

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

(2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the

Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

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

(2) An urban wholesale water supplier whose urban water management plan prepared pursuant to Part 2.6 (commencing with Section 10610) was due and not submitted in 2010 is granted an extension to July 1, 2011, to permit coordination between an urban wholesale water supplier and urban retail water suppliers.

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

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

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

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

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

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

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

(2) If the urban retail water supplier elects to adjust its estimate of compliance daily per capita water use due to one or more of the factors described in

paragraph (1), it shall provide the basis for, and data supporting, the adjustment in the report required by Section 10608.40.

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

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

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

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

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

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

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

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

(c) For an urban retail water supplier that supplies water to a United States Department of Defense military installation, the urban retail water supplier's implementation plan for complying with this part shall consider the conservation of that military installation under federal Executive Order 13514.

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

an ordinance or resolution adopted pursuant to a declaration of drought emergency by an urban retail water supplier.

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

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

(1) Through an urban wholesale water supplier.

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

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

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

(5) By hydrologic region.

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

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

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

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

10608.40. Urban water retail suppliers shall report to the department on their progress in meeting their urban water use targets as part of their urban water management plans

submitted pursuant to Section 10631. The data shall be reported using a standardized form developed pursuant to Section 10608.52.

10608.42.(a) The department shall review the 2015 urban water management plans and report to the Legislature by July 1, 2017, on progress towards achieving a 20-percent reduction in urban water use by December 31, 2020. The report shall include recommendations on changes to water efficiency standards or urban water use targets to achieve the 20-percent reduction and to reflect updated efficiency information and technology changes.

(b) A report to be submitted pursuant to subdivision (a) shall be submitted in compliance with Section 9795 of the Government Code.

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

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

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

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

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

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

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

Chapter 4 Agricultural Water Suppliers

SECTION 10608.48

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

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

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

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

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

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

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

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

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

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

(B) Conjunctive use of groundwater.

(C) Appropriate increase of groundwater recharge.

(D) Reduction in problem drainage.

(E) Improved management of environmental resources.

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

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

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

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

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

(9) Automate canal control structures.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Chapter 5 Sustainable Water Management

Section 10608.50

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

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

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

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

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

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

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

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

Chapter 6 Standardized Data Collection

SECTION 10608.52

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

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

Chapter 7 Funding Provisions

Section 10608.56-10608.60

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

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

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

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

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

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

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

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

Chapter 8 Quantifying Agricultural Water Use Efficiency

SECTION 10608.64

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

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APPENDIX B

DWR Recommended 2015 UWMP Tables

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Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
CA0710001	City of Antioch	31,798	4,521
	TOTAL	31,798	4,521
NOTES: Volumes are in million gallons (MG) and includes only potable and raw water.			

Table 2-2: Plan Identification			
Select Only One	**Type of Plan**		**Name of RUWMP or Regional Alliance** *if applicable*
☑	**Individual UWMP**		
	☐	Water Supplier is also a member of a RUWMP	
	☑	Water Supplier is also a member of a Regional Alliance	Contra Costa Water District Alliance
☐	**Regional Urban Water Management Plan (RUWMP)**		
NOTES: City is submitting an individual UWMP and is meeting all SB X7-7 requirements on an individual basis. City is also participating in the Contra Costa Water District Regional Alliance. The Regional Alliance Report and verification forms have been submitted by CCWD on behalf of the Regional Alliance member agencies. Additionally, a letter dated June 8, 2011 (Appendix K) was submitted to DWR providing the list of water suppliers forming the Regional Alliance.			

Table 2-3: Agency Identification	
Type of Agency (select one or both)	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year	
☑	UWMP Tables Are in Calendar Years
☐	UWMP Tables Are in Fiscal Years
Units of Measure Used in UWMP	
Unit	MG
NOTES:	

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 CWC 10631.
Wholesale Water Supplier Name
Contra Costa Water District (CCWD)
NOTES:

Table 3-1 Retail: Population - Current and Projected						
Population Served	2015	2020	2025	2030	2035	2040*(opt)*
	108,298	108,900	112,400	116,200	120,300	124,600
NOTES: 2015 Population from Department of Finance. Projected data from City's Housing Element (2015-2023).						

Table 4-1 Retail: Demands for Potable and Raw Water - Actual			
Use Type	2015 Actual		
	Additional Description	Level of Treatment When Delivered	Volume
Single Family		Drinking Water	2,768
Multi-Family		Drinking Water	405
Commercial		Drinking Water	300
Industrial		Drinking Water	85
Institutional/Governmental		Drinking Water	178
Landscape		Drinking Water	465
Other	firelines and hydrant meters	Drinking Water	12
Other	unbilled unmetered	Drinking Water	57
Losses	potable system losses	Drinking Water	222
Landscape		Raw Water	29
		TOTAL	4,521
NOTES: Volumes are in MG; unbilled unmetered is estimated to be 1.25 percent of total suppy per AWWA Water Audit assumptions.			

Table 4-2 Retail: Demands for Potable and Raw Water - Projected						
Use Type	Additional Description	Projected Water Use *Report To the Extent that Records are Available*				
		2020	2025	2030	2035	2040-opt
Single Family		4,051	4,181	4,323	4,477	4,637
Multi-Family		593	612	633	655	679
Commercial		440	454	469	486	503
Industrial		125	129	133	138	143
Institutional/Governmental		260	269	278	287	298
Landscape		681	703	727	753	780
Other	firelines and hydrant meters	18	18	19	20	20
Losses	potable system losses	362	374	387	400	415
Landscape	raw water for Lone Tree Golf Course	29	29	29	29	29
	TOTAL	6,559	6,769	6,998	7,245	7,504
NOTES: Volumes are in MG.						

Table 4-3 Retail: Total Water Demands						
	2015	2020	2025	2030	2035	2040 *(opt)*
Potable and Raw Water *From Tables 4-1 and 4-2*	4,521	6,559	6,769	6,998	7,245	7,504
Recycled Water Demand* *From Table 6-4*	79	326	489	489	489	489
TOTAL WATER DEMAND	4,600	6,885	7,258	7,487	7,734	7,993
**Recycled water demand fields will be blank until Table 6-4 is complete.*						
NOTES: Volumes are in MG; Table references refer to DWR table numbers.						

Table 4-4 Retail: 12 Month Water Loss Audit Reporting	
Reporting Period Start Date	Volume of Water Loss
07/2014	125
NOTES: Volumes are in MG.	

Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook)	No
Are Lower Income Residential Demands Included In Projections?	Yes
NOTES:	

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

Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 Year	1999	2008	185	175	165
5 Year	2004	2008	184		

*All values are in Gallons per Capita per Day (GPCD).

NOTES:

Table 5-2: 2015 Compliance
Retail Agency or Regional Alliance Only

Actual 2015 GPCD*	2015 Interim Target GPCD*	**Optional Adjustments to 2015 GPCD** *From Methodology 8*					2015 GPCD* *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Extraordinary Events*	Economic Adjustment*	Weather Normalization*	TOTAL Adjustments*	Adjusted 2015 GPCD*		
114	175	0	0	0	0	114	114	Yes

**All values are in Gallons per Capita per Day (GPCD).*

NOTES:

Table 6-1 Retail: Groundwater Volume Pumped						
☑	Supplier does not pump groundwater. The supplier will not complete the table below.					
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
	TOTAL	0	0	0	0	0
NOTES:						

Table 6-2 Retail: Wastewater Collected Within Service Area in 2015						
☐	There is no wastewater collection system. The supplier will not complete the table below.					
100	Percentage of 2015 service area covered by wastewater collection system *(optional)*					
100	Percentage of 2015 service area population covered by wastewater collection system *(optional)*					
Wastewater Collection			**Recipient of Collected Wastewater**			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party? *(optional)*
City of Antioch	Metered	1,988	Delta Diablo (DD)	DD WWTP	Yes	No
Total Wastewater Collected from Service Area in 2015:		1,988				
NOTES: Volumes are in MG. Volume of wastewater collected from the City of Antioch is metered at the Antioch Pump Station (additional flows from the Antioch-Pittsburg interceptor are not routinely monitored).						

Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2015										
☐	No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.									
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)*	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2015 volumes			
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
Delta Diablo	New York Slough	Sacramento-San Joaquin Rivers Delta	2071013001	Bay or estuary outfall	Yes	Tertiary	4,453	2,547	79	1,827
						Total	4,453	2,547	79	1,827
NOTES: Volumes are in MG. Approximately 495 MG of recycled water effluent is returned to treatment plant as blowdown from Calpine. This recycled water volume is not included in the treated wastewater total.										

Table 6-4 Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area								
☐	Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.							
Name of Agency Producing (Treating) the Recycled Water:		Delta Diablo						
Name of Agency Operating the Recycled Water Distribution System:		City of Antioch						
Supplemental Water Added in 2015		None						
Source of 2015 Supplemental Water		Not Applicable						
Beneficial Use Type	General Description of 2015 Uses	Level of Treatment	2015	2020	2025	2030	2035	2040 (opt)
Agricultural irrigation								
Landscape irrigation (excludes golf courses)	City Parks	Tertiary	14	183	346	346	346	346
Golf course irrigation	Lone Tree Golf Course	Tertiary	65	143	143	143	143	143
Commercial use								
Industrial use								
Geothermal and other energy production								
Seawater intrusion barrier								
Recreational impoundment								
Wetlands or wildlife habitat								
Groundwater recharge (IPR)*								
Surface water augmentation (IPR)*								
Direct potable reuse								
Other *(Provide General Description)*								
		Total:	79	326	489	489	489	489
**IPR - Indirect Potable Reuse*								
NOTES: Volumes are in MG.								

Table 6-5 Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual		
☐	Recycled water was not used in 2010 nor projected for use in 2015. The supplier will not complete the table below.	
Use Type	**2010 Projection for 2015**	**2015 Actual Use**
Agricultural irrigation	0	0
Landscape irrigation (excludes golf courses)	16	14
Golf course irrigation	143	65
Total	159	79
NOTES: Volumes are in MG.		

Table 6-6 Retail: Methods to Expand Future Recycled Water Use			
	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
Section 6.5.4	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
Building code modification	New developments are required to install recycled water facilities as part of their improvements	2015	410
Public outreach	Examples include billing fliers, newsletters, public meetings, and advertisement	2011	0
		Total	410
NOTES: Volumes are in MG. The expected increase in recycled water for all actions is included in the "Building code modification" total.			

Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
☑	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
☐	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other agencies?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Agency
NOTES:						

Table 6-8 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2015		
		Actual Volume	Water Quality	Total Right or Safe Yield *(optional)*
Purchased or Imported Water	Contra Costa Water District	3,915	Raw Water	
Surface water	San Joaquin River Intake	409	Raw Water	
Recycled Water	Delta Diablo	79	Recycled Water	
Supply from Storage	Storage from City Municipal Reservoir	197	Raw Water	
	Total	4,600		0
NOTES: Volumes are in MG; Supply from Storage (Municipal Reservoir) was collected from raw water supplies in previous years and used for consumption in 2015.				

Table 6-9 Retail: Water Supplies — Projected											
Water Supply	Additional Detail on Water Supply	**Projected Water Supply** *Report To the Extent Practicable*									
		2020		**2025**		**2030**		**2035**		**2040** *(opt)*	
		Reasonably Available Volume	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)*
Purchased or Imported Water	Contra Costa Water District	4,099		4,309		4,538		4,785		5,044	
Surface water	San Joaquin River Intake	2,460		2,460		2,460		2,460		2,460	
Recycled Water	Delta Diablo	326		489		489		489		489	
	Total	6,885	0	7,258	0	7,487	0	7,734	0	7,993	0
NOTES: Volumes are in MG; CCWD will provide 100% of the potable water demand minus supplies from City intake.											

Table 7-1 Retail: Basis of Water Year Data			
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 1999-2000, use 2000*	**Available Supplies if Year Type Repeats**	
		☐ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____	
		☑ Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available	**% of Average Supply**
Average Year	2000-2004	9,973	100%
Single-Dry Year	1994	9,275	93%
Multiple-Dry Years 1st Year	1987	9,275	93%
Multiple-Dry Years 2nd Year	1988	6,682	67%
Multiple-Dry Years 3rd Year	1989	6,682	67%
NOTES: Volumes are in MG.			

Table 7-2 Retail: Normal Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 *(Opt)*
Supply totals	6,885	7,258	7,487	7,734	7,993
Demand totals	6,885	7,258	7,487	7,734	7,993
Difference	0	0	0	0	0
NOTES: Volumes are in MG; table references refer to DWR table numbers.					

Table 7-3 Retail: Single Dry Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 (Opt)
Supply totals	6,885	7,258	7,487	7,734	7,993
Demand totals	6,885	7,258	7,487	7,734	7,993
Difference	0	0	0	0	0
NOTES: Volumes are in MG.					

Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2020	2025	2030	2035	2040 (Opt)
First year	Supply totals	6,885	7,258	7,487	7,734	7,993
	Demand totals	6,885	7,258	7,487	7,734	7,993
	Difference	0	0	0	0	0
Second year	Supply totals	6,885	7,258	7,487	7,589	7,543
	Demand totals	6,885	7,258	7,487	7,589	7,543
	Difference	0	0	0	0	0
Third year	Supply totals	6,229	6,581	6,787	6,865	6,867
	Demand totals	6,229	6,581	6,787	6,865	6,867
	Difference	0	0	0	0	0

NOTES: Volumes are in MG; Assumes potable water demand will reduce by up to 15 percent in the third year of a multi-dry year to meet available supplies. CCWD supplies vary according to CCWD reliability policy and includes a maximum supply reduction of 15 percent by 2040.

Table 8-1 Retail Stages of Water Shortage Contingency Plan		
Stage	Complete Both	
	Percent Supply Reduction[1]	Water Supply Condition
I	5-10%	Minor Drought
II	10-20%	Severe Drought
III	20-35%	Catastrophic Interruption
IV	35-50%	Catastrophic Interruption
[1] *One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.*		
NOTES: It is CCWD policy to provide a minimum of 85% of City's water demand during a drought.		

Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses			
Stage	Restrictions	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
2	Landscape - Restrict or prohibit runoff from landscape irrigation		Yes
3	Landscape - Limit landscape irrigation to specific times	Limit 9 AM to 5PM	Yes
3	Landscape - Limit landscape irrigation to specific days	Limit more than 3 days per week	Yes
3	Landscape - Other landscape restriction or prohibition	Prohibit sprinklers during and 2 days after rain	Yes
3	CII - Lodging establishment must offer opt out of linen service		Yes
3	CII - Restaurants may only serve water upon request		Yes
2	Water Features - Restrict water use for decorative water features, such as fountains		Yes
2	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner		Yes
2	Other - Require automatic shut of hoses		Yes
3	Other - Prohibit use of potable water for construction and dust control		Yes
2	Other - Prohibit use of potable water for washing hard surfaces	Prohibit cleaning of streets, sidewalks, walkways, parking areas, patios, porches	Yes
2	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water		Yes
NOTES:			

Table 8-3 Retail Only: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods		
Stage	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference
1	Expand Public Information Campaign	Provide educational programs
1	Improve Customer Billing	Provide water conservation kits
1	Provide Rebates on Plumbing Fixtures and Devices	Provide plumbing fixture replacements
3	Increase Water Waste Patrols	Implement excess use penalties and flow restrictions
1	Other	Demand reduction program
2	Other	Voluntary rationing
2	Other	Use prohibitions
2	Other	Restrict for only priority uses
3	Other	Mandatory rationing
3	Other	Per capita allotment by customer type
NOTES:		

Table 8-4 Retail: Minimum Supply Next Three Years			
	2016	2017	2018
Available Water Supply	9,275	6,682	6,682
NOTES: Volumes are in MG.			

Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
City of Antioch	☑	☑
County Name	60 Day Notice	Notice of Public Hearing
Contra Costa County	☑	☑

APPENDIX C

DWR 2015 UWMP Checklist

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Appendix C. Urban Water Management Plan Checklist
Checklist Arranged by Subject

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
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	**Section 2.1 (page 2-1)**
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 2.5.2	**Section 2.5 (page 2-3)**
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.	Plan Preparation	Section 2.5.2	**Section 2.5.2.2 (page 2-4); Appendix D**
10631(a)	Describe the water supplier service area.	System Description	Section 3.1	**Sections 3.2 (page 3-1)**
10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3.3	**Section 3.3 (page 3-4)**
10631(a)	Provide population projections for 2020, 2025, 2030, and 2035.	System Description	Section 3.4	**Section 3.4; Table 3-2 (page 3-5)**
10631(a)	Describe other demographic factors affecting the supplier's water management planning.	System Description	Section 3.4	**Section 3.4.1 (page 3-6)**
10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Sections 3.4 and 5.4	**Section 3.4; Table 3-2 (page 3-5)**
10631(e)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.2	**Section 4.2 (page 4-2)**
10631(e)(3)(A)	Report the distribution system water loss for the most recent 12-month period available.	System Water Use	Section 4.3	**Section 4.3 (page 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 4.5	**Section 4.5 (page 4-5)**
10608.20(b)	Retail suppliers shall adopt a 2020 water use target using one of four methods.	Baselines and Targets	Section 5.7 and Appendix E	**Section 5.6 (page 5-4); Appendix F**
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	Chapter 5 and Appendix E	**Section 5.5, 5.6, and 5.7 (pages 5-3 through 5-5); Appendix F**
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 is the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 5.7.2	**Section 5.6 (page 5-4); Appendix F**
10608.24(a)	Retail suppliers shall meet their interim target by December 31, 2015.	Baselines and Targets	Section 5.8 and Appendix E	**Section 5.7 (page 5-5); Appendix F**
1608.24(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	Section 5.8.2	**N/A**
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	Section 5.1	**N/A**
10608.40	Retail suppliers shall report on their progress in meeting their water use targets. The data shall be reported using a standardized form.	Baselines and Targets	Section 5.8 and Appendix E	**Section 5.7 (page 5-5); Appendix F**
10631(b)	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, 2030, and 2035.	System Supplies	Chapter 6	**Section 6.9; Tables 6-8 and 6-9 (page 6-12)**
10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.2	**Section 6.2 (page 6-4)**
10631(b)(1)	Indicate whether a 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	**N/A**
10631(b)(2)	Describe the groundwater basin.	System Supplies	Section 6.2.1	**N/A**
10631(b)(2)	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 6.2.2	**N/A**
10631(b)(2)	For unadjudicated basins, indicate whether or not the department has identified the basin as overdrafted, or projected to become overdrafted. Describe efforts by the supplier to eliminate the long-term overdraft condition.	System Supplies	Section 6.2.3	**N/A**

Appendix C. Urban Water Management Plan Checklist Checklist Arranged by Subject				
CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
10631(b)(3)	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years.	System Supplies	Section 6.2.4	**N/A**
10631(b)(4)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Sections 6.2 and 6.9	**N/A**
10631(d)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System Supplies	Section 6.7	**Section 6.7 (page 6-11)**
10631(g)	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 multiple-dry years.	System Supplies	Section 6.8	**Section 6.8 (page 6-11)**
10631(i)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.6	**Section 6.6 (page 6-10)**
10631(j)	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	**Section 2.5.1 (page 2-3)**
10631(j)	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	Section 2.5.1	**N/A**
10633	For wastewater and recycled water, coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.1	**Section 6.5.1 (page 6-6)**
10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area. Include quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	System Supplies (Recycled Water)	Section 6.5.2	**Section 6.5.2 (page 6-6)**
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 6.5.2.2	**Section 6.5.2; Table 6-3 (page 6-7)**
10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.3 and 6.5.4	**Section 6.5.3 (page 6-8)**
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 6.5.4	**Section 6.5.4 (page 6-8)**
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 6.5.4	**Section 6.5.4 (page 6-8)**
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 6.5.5	**Section 6.5.5 (page 6-9)**
10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.5	**Section 6.5.5 (page 6-9)**
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 7.4	**Section 7.4 (page 7-8)**
10631(c)(1)	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage.	Water Supply Reliability Assessment	Section 7.1	**Section 7.1 (page 7-1)**
10631(c)(1)	Provide data for an average water year, a single dry water year, and multiple dry water years	Water Supply Reliability Assessment	Section 7.2	**Section 7.2 (page 7-4)**
10631(c)(2)	For any water source that may not be available at a consistent level of use, describe plans to supplement or replace that source.	Water Supply Reliability Assessment	Section 7.1	**Section 7.1.1.2 (page 7-3)**
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	**Section 7.1 (page 7-1)**
10635(a)	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Section 7.3	**Section 7.3 (page 7-5)**
10632(a) and 10632(a)(1)	Provide an urban water shortage contingency analysis that specifies stages of action and an outline of specific water supply conditions at each stage.	Water Shortage Contingency Planning	Section 8.1	**Section 8.1 (page 8-1)**
10632(a)(2)	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency.	Water Shortage Contingency Planning	Section 8.9	**Section 8.9 (page 8-8)**

Appendix C. Urban Water Management Plan Checklist Checklist Arranged by Subject				
CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location
10632(a)(3)	Identify actions to be undertaken by the urban water supplier in case of a catastrophic interruption of water supplies.	Water Shortage Contingency Planning	Section 8.8	**Section 8.8 (page 8-8)**
10632(a)(4)	Identify mandatory prohibitions against specific water use practices during water shortages.	Water Shortage Contingency Planning	Section 8.2	**Section 8.2 (page 8-3)**
10632(a)(5)	Specify consumption reduction methods in the most restrictive stages.	Water Shortage Contingency Planning	Section 8.4	**Section 8.4 (page 8-6)**
10632(a)(6)	Indicated penalties or charges for excessive use, where applicable.	Water Shortage Contingency Planning	Section 8.3	**Section 8.3 (page 8-5)**
10632(a)(7)	Provide an analysis of the impacts of each of the actions and conditions in the water shortage contingency analysis on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts.	Water Shortage Contingency Planning	Section 8.6	**Section 8.6 (page 8-7)**
10632(a)(8)	Provide a draft water shortage contingency resolution or ordinance.	Water Shortage Contingency Planning	Section 8.7	**Section 8.7 (page 8-7); Appendix H**
10632(a)(9)	Indicate a mechanism for determining actual reductions in water use pursuant to the water shortage contingency analysis.	Water Shortage Contingency Planning	Section 8.5	**Section 8.5 (page 8-7)**
10631(f)(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	Sections 9.2 and 9.3	**Section 9.2 (page 9-2)**
10631(f)(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	Sections 9.1 and 9.3	**N/A**
10631(j)	CUWCC members may submit their 2013-2014 CUWCC BMP annual reports in lieu of, or in addition to, describing the DMM implementation in their UWMPs. This option is only allowable if the supplier has been found to be in full compliance with the CUWCC MOU.	Demand Management Measures	Section 9.5	**Section 9.5 (page 9-12)**
10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets.	Plan Adoption, Submittal, and Implementation	Section 10.3	**Section 10.3 (page 10-2)**
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.	Plan Adoption, Submittal, and Implementation	Section 10.2.1	**Section 10.2; Table 10-1 (page 10-1)**
10621(d)	Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.	Plan Adoption, Submittal, and Implementation	Sections 10.3.1 and 10.4	**Section 10.4 (page 10-2)**
10635(b)	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 60 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	**Section 10.4 (page 10-2)**
10642	Provide supporting documentation that the urban water supplier made the plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan.	Plan Adoption, Submittal, and Implementation	Sections 10.2.2, 10.3, and 10.5	**Section 10.2 and 10.3 (page 10-1); Appendix D**
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	Sections 10.2.1	**Section 10.2 (page 10-1); Appendix D**
10642	Provide supporting documentation that the plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 10.3.1	**Section 10.3 (page 10-2), Appendix K**
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 10.4.3	**Section 10.4 (page 10-2)**
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 10.4.4	**Section 10.4 (page 10-2)**
10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Sections 10.4.1 and 10.4.2	**Section 10.4 and 10.7 (page 10-2)**
10645	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	**Section 10.5 (page 10-2)**

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APPENDIX D

Required Notices

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December 18, 2015

Mr. Jerry D. Brown
General Manager
Contra Costa Water District
P.O. Box H20
Concord, CA 94524-2099

RE: City of Antioch – 2015 Urban Water Management Plan Update

Dear Mr. Brown:

The City of Antioch (City) is currently in the process of updating its Urban Water Management Plan (UWMP). 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. 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.

As an urban water supplier, the City coordinates with water management agencies, relevant public agencies and other water suppliers on the preparation of the UWMP update. The City will be reviewing the UWMP and will make amendments and updates, as appropriate.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to sbuenting@ci.antioch.ca.us. Thank you.

City of Antioch

Scott Buenting, PE
Associate Engineer

Department of Public Works/Capital Improvements Division
P.O. Box 5007, 200 H Street, Antioch, CA 94531 • Tel: 925-779-7050 • Fax: 925-779-7062 • www.ci.antioch.ca.us

December 18, 2015

Mr. Steven Duran
City Manager
City of Antioch
200 H Street
Antioch, CA 94509

RE: City of Antioch – 2015 Urban Water Management Plan Update

Dear Mr. Duran:

The City of Antioch (City) is currently in the process of updating its Urban Water Management Plan (UWMP). 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. 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.

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If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to sbuenting@ci.antioch.ca.us. Thank you.

City of Antioch

Scott Buenting, PE
Associate Engineer

Department of Public Works/Capital Improvements Division
P.O. Box 5007, 200 H Street, Antioch, CA 94531 • Tel: 925-779-7050 • Fax: 925-779-7062 • www.ci.antioch.ca.us

December 18, 2015

David Twa
County Administrator
Contra Costa County
651 Pine St, 10th Floor
Martinez, CA 94553

RE: City of Antioch – 2015 Urban Water Management Plan Update

Dear Mr. Twa:

The City of Antioch (City) is currently in the process of updating its Urban Water Management Plan (UWMP). 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. 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.

As an urban water supplier, the City coordinates with water management agencies, relevant public agencies and other water suppliers on the preparation of the UWMP update. The City will be reviewing the UWMP and will make amendments and updates, as appropriate.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to sbuenting@ci.antioch.ca.us. Thank you.

City of Antioch

Scott Buenting, PE
Associate Engineer

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December 18, 2015

Mr. Gary W. Darling
General Manager
Delta Diablo
2500 Pittsburg-Antioch Hwy.
Antioch, CA 94509

RE: City of Antioch – 2015 Urban Water Management Plan Update

Dear Mr. Darling:

The City of Antioch (City) is currently in the process of updating its Urban Water Management Plan (UWMP). 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. 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.

As an urban water supplier, the City coordinates with water management agencies, relevant public agencies and other water suppliers on the preparation of the UWMP update. The City will be reviewing the UWMP and will make amendments and updates, as appropriate.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to sbuenting@ci.antioch.ca.us. Thank you.

City of Antioch

Scott Buenting, PE
Associate Engineer

Department of Public Works/Capital Improvements Division
P.O. Box 5007, 200 H Street, Antioch, CA 94531 • Tel: 925-779-7050 • Fax: 925-779-7062 • www.ci.antioch.ca.us

December 18, 2015

Joe Sbranti
City Manager
City of Pittsburg
65 Civic Avenue
Pittsburg, CA 94565

RE: City of Antioch – 2015 Urban Water Management Plan Update

Dear Mr. Sbranti:

The City of Antioch (City) is currently in the process of updating its Urban Water Management Plan (UWMP). 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. 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.

As an urban water supplier, the City coordinates with water management agencies, relevant public agencies and other water suppliers on the preparation of the UWMP update. The City will be reviewing the UWMP and will make amendments and updates, as appropriate.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to sbuenting@ci.antioch.ca.us. Thank you.

City of Antioch

Scott Buenting, PE
Associate Engineer

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December 18, 2015

Gustavo Vina
City Manager
City of Brentwood
150 City Park Way
Brentwood, CA 94513

RE: City of Antioch – 2015 Urban Water Management Plan Update

Dear Mr. Vina:

The City of Antioch (City) is currently in the process of updating its Urban Water Management Plan (UWMP). 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. 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.

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City of Antioch

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Associate Engineer

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P.O. Box 5007, 200 H Street, Antioch, CA 94531 • Tel: 925-779-7050 • Fax: 925-779-7062 • www.ci.antioch.ca.us

PW340-12

May 6, 2016

Gustavo Vina
City Manager
City of Brentwood
150 City Park Way
Brentwood, CA 94513

RE: Review of Draft City of Antioch's 2015 Urban Water Management Plan Update

Dear Mr. Vina:

In accordance with the Urban Water Management Planning Act (California Water Code Section 10610 et seq.), the City of Antioch is required to update its Urban Water Management Plan (UWMP) to meet the California Department of Water Resources (DWR) requirements for a 2015 UWMP. The City's last UWMP was adopted in June 2011.

The City has completed its draft 2015 UWMP update and has scheduled a public hearing for the review of the updated UWMP, including selection of an SB X7-7 Target Method, on **TUESDAY MAY 24, 2016** at **7 P.M.** at the City Council Chambers at the City of Antioch's City Hall located at 200 H Street. It is anticipated that the draft 2015 UWMP will be formally adopted immediately following the public hearing.

At this time we invite your agency to review the draft 2015 UWMP located at www.antiochwater.com and available at the City Clerk's Office located at 200 H Street and the Antioch Public Library located at 501 West 18th Street. Please forward comments to me no later than 5:00 pm Tuesday, May 24, 2016 at:

City of Antioch
Department of Public Works/Capital Improvements Division
P.O. Box 5007, 200 H Street
Antioch, CA 94531

Phone: (925) 779-7050
Email: sbuenting@ci.antioch.ca.us

Sincerely,

City of Antioch

Scott Buenting, PE
Associate Engineer

May 6, 2016

Mr. Jerry D. Brown
General Manager
Contra Costa Water District
P.O. Box H20
Concord, CA 94524-2099

RE: Review of Draft City of Antioch's 2015 Urban Water Management Plan Update

Dear Mr. Brown:

In accordance with the Urban Water Management Planning Act (California Water Code Section 10610 et seq.), the City of Antioch is required to update its Urban Water Management Plan (UWMP) to meet the California Department of Water Resources (DWR) requirements for a 2015 UWMP. The City's last UWMP was adopted in June 2011.

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Department of Public Works/Capital Improvements Division
P.O. Box 5007, 200 H Street
Antioch, CA 94531

Phone: (925) 779-7050
Email: sbuenting@ci.antioch.ca.us

Sincerely,

City of Antioch

Scott Buenting, PE
Associate Engineer

May 6, 2016

Mr. Steven Duran
City Manager
City of Antioch
200 H Street
Antioch, CA 94509

RE: Review of Draft City of Antioch's 2015 Urban Water Management Plan Update

Dear Mr. Duran:

In accordance with the Urban Water Management Planning Act (California Water Code Section 10610 et seq.), the City of Antioch is required to update its Urban Water Management Plan (UWMP) to meet the California Department of Water Resources (DWR) requirements for a 2015 UWMP. The City's last UWMP was adopted in June 2011.

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Department of Public Works/Capital Improvements Division
P.O. Box 5007, 200 H Street
Antioch, CA 94531

Phone: (925) 779-7050
Email: sbuenting@ci.antioch.ca.us

Sincerely,

City of Antioch

Scott Buenting, PE
Associate Engineer

May 6, 2016

Mr. David Twa
County Administrator
Contra Costa County
651 Pine St, 10th Floor
Martinez, CA 94553

RE: Review of Draft City of Antioch's 2015 Urban Water Management Plan Update

Dear Mr. Twa:

In accordance with the Urban Water Management Planning Act (California Water Code Section 10610 et seq.), the City of Antioch is required to update its Urban Water Management Plan (UWMP) to meet the California Department of Water Resources (DWR) requirements for a 2015 UWMP. The City's last UWMP was adopted in June 2011.

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P.O. Box 5007, 200 H Street
Antioch, CA 94531

Phone: (925) 779-7050
Email: sbuenting@ci.antioch.ca.us

Sincerely,

City of Antioch

Scott Buenting, PE
Associate Engineer

May 6, 2016

Mr. Gary W. Darling
General Manager
Delta Diablo
2500 Pittsburg-Antioch Hwy.
Antioch, CA 94509

RE: Review of Draft City of Antioch's 2015 Urban Water Management Plan Update

Dear Mr. Darling:

In accordance with the Urban Water Management Planning Act (California Water Code Section 10610 et seq.), the City of Antioch is required to update its Urban Water Management Plan (UWMP) to meet the California Department of Water Resources (DWR) requirements for a 2015 UWMP. The City's last UWMP was adopted in June 2011.

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Department of Public Works/Capital Improvements Division
P.O. Box 5007, 200 H Street
Antioch, CA 94531

Phone: (925) 779-7050
Email: sbuenting@ci.antioch.ca.us

Sincerely,

City of Antioch

Scott Buenting, PE
Associate Engineer

May 6, 2016

Mr. Joe Sbranti
City Manager
City of Pittsburg
65 Civic Avenue
Pittsburg, CA 94565

RE: Review of Draft City of Antioch's 2015 Urban Water Management Plan Update

Dear Mr. Sbranti:

In accordance with the Urban Water Management Planning Act (California Water Code Section 10610 et seq.), the City of Antioch is required to update its Urban Water Management Plan (UWMP) to meet the California Department of Water Resources (DWR) requirements for a 2015 UWMP. The City's last UWMP was adopted in June 2011.

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Department of Public Works/Capital Improvements Division
P.O. Box 5007, 200 H Street
Antioch, CA 94531

Phone: (925) 779-7050
Email: sbuenting@ci.antioch.ca.us

Sincerely,

City of Antioch

Scott Buenting, PE
Associate Engineer

NOTICE OF PUBLIC HEARING AND AVAILABILITY OF DRAFT URBAN WATER MANAGEMENT PLAN FOR PUBLIC INSPECTION

NOTICE IS HEREBY GIVEN that the City Council of the City of Antioch will hold a public hearing in the City Council Chambers, City Hall, 200 "H" Street at **7:00 P.M.,** or thereafter on **TUESDAY May 24, 2016,** on the following matter:

> The City of Antioch has prepared a Draft Urban Water Management Plan. The UWMP documents the City's planning activities to ensure adequate water supplies to meet existing and future demands for water. The UWMP presents forecasted supplies and demands, describes the City's conservation programs, and identifies recycled water opportunities to the year 2040. The UWMP also includes a water shortage contingency analysis and demands management measures.

If any person challenges the decision of the City in this matter in court, he or she may be limited to raising only those issues that were raised at the public hearing described in this notice, or in written correspondence delivered to the City at, or prior to, the public hearing.

A copy of the proposed plan is available for public inspection after May 10, 2016 at the City Clerk's Office, City Hall, 200 "H" Street, Antioch and the Antioch Public Library, 501 West 18th Street. The Draft Plan will also be available for review on the City website at www.antiochwater.com. Written statements in favor of, or in opposition to this matter, may be filed with the City Clerk, City Hall, 200 "H" Street (P.O. Box 5007), Antioch, CA 94531-5007, at any time prior to the hearing. Written comments should be submitted no later than *May 23, 2016.* All interested persons are invited to be present at aforesaid hearing and be heard thereon. The meeting facility is accessible to the handicapped. Auxiliary aides will be made available, upon request in advance, for persons with hearing or vision disabilities.

Arne Simonsen
Arne Simonson, City Clerk

Dated: May 5, 2016

Publish: May 10 and May 17, 2016

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Advertising Order Confirmation

BayAreaNewsGroup EAST BAY

Ad Number	Ad Size	Color	Production Color	Ad Attributes	Production Method	Production Notes
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		Legal Liner	

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Arne Simonsen

Arne Simonson, City Clerk

ECT#5727999: May 10, 17, 2016

Product	Requested Placement	Requested Position	Run Dates	# Inserts
East Bay Times:ECT	Legals CLS	General Legal - 1076~	05/10/16, 05/17/16	2
East Bay Times:EB Full	Legals CLS	General Legal - 1076~	05/10/16, 05/17/16	2

Order Charges:

Net Amount	Tax Amount	Total Amount	Payment Amount	Amount Due
212.40	0.00	212.40	0.00	$212.40

Please note: If you pay by bank card, your card statement will show "CAL NEWSPAPER ADV" or "CALIFORNIA NEWSPAPER ADVERTISING SERVICES", depending on the type of card used.

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APPENDIX E

AWWA Water Audit

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AWWA Free Water Audit Software v5.0

American Water Works Association Copyright © 2014, All Rights Reserved.

This spreadsheet-based water audit tool is designed to help quantify and track water losses associated with water distribution systems and identify areas for improved efficiency and cost recovery. It provides a "top-down" summary water audit format, and is not meant to take the place of a full-scale, comprehensive water audit format.

Auditors are strongly encouraged to refer to the most current edition of AWWA M36 Manual for Water Audits for detailed guidance on the water auditing process and targetting loss reduction levels

The spreadsheet contains several separate worksheets. Sheets can be accessed using the tabs towards the bottom of the screen, or by clicking the buttons below.

Please begin by providing the following information

Name of Contact Person:	Lori Sarti	
Email Address:	lsarti@ci.antioch.ca.us	
Telephone | Ext.:	925-779-7024	
Name of City / Utility:	City of Antioch	
City/Town/Municipality:	Antioch	
State / Province:	California (CA)	
Country:	USA	
Year:	2014-15	Financial Year
Start Date:	07/2014	Enter MM/YYYY numeric format
End Date:	06/2015	Enter MM/YYYY numeric format
Audit Preparation Date:	3/1/2016	
Volume Reporting Units:	Million gallons (US)	
PWSID / Other ID:	CA0710001	

The following guidance will help you complete the Audit

All audit data are entered on the ***Reporting Worksheet***

- Value can be entered by user
- Value calculated based on input data
- These cells contain recommended default values

Use of Option (Radio) Buttons: Pcnt: 0.25% Value:

Select the default percentage by choosing the option button on the left

To enter a value, choose this button and enter a value in the cell to the right

The following worksheets are available by clicking the buttons below or selecting the tabs along the bottom of the page

Instructions
The current sheet. Enter contact information and basic audit details (year, units etc)

Reporting Worksheet
Enter the required data on this worksheet to calculate the water balance and data grading

Comments
Enter comments to explain how values were calculated or to document data sources

Performance Indicators
Review the performance indicators to evaluate the results of the audit

Water Balance
The values entered in the Reporting Worksheet are used to populate the Water Balance

Dashboard
A graphical summary of the water balance and Non-Revenue Water components

Grading Matrix
Presents the possible grading options for each input component of the audit

Service Connection Diagram
Diagrams depicting possible customer service connection line configurations

Definitions
Use this sheet to understand the terms used in the audit process

Loss Control Planning
Use this sheet to interpret the results of the audit validity score and performance indicators

Example Audits
Reporting Worksheet and Performance Indicators examples are shown for two validated audits

Acknowledgements
Acknowledgements for the AWWA Free Water Audit Software v5.0

If you have questions or comments regarding the software please contact us via email at: wlc@awwa.org

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

American Water Works Association.
Copyright © 2014, All Rights Reserved.

? Click to access definition
+ Click to add a comment

Water Audit Report for: City of Antioch (CA0710001)
Reporting Year: 2014-15 | 7/2014 - 6/2015

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: 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.

<---------- Enter grading in column 'E' and 'J' ---------->

Master Meter and Supply Error Adjustments

WATER SUPPLIED

Volume from own sources:	+ ?	3	4,790.675	MG/Yr	+ ?	3	-3.00%		MG/Yr
Water imported:	+ ?			MG/Yr	+ ?				MG/Yr
Water exported:	+ ?			MG/Yr	+ ?				MG/Yr

Pcnt: Value:

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 4,938.840 MG/Yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

					Pcnt:	Value:	
Billed metered:	+ ?	7	4,367.563	MG/Yr			
Billed unmetered:	+ ?	1	1.000	MG/Yr			
Unbilled metered:	+ ?	7	383.945	MG/Yr			
Unbilled unmetered:	+ ?		61.736	MG/Yr	1.25%		MG/Yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

Use buttons to select percentage of water supplied **OR** value

AUTHORIZED CONSUMPTION: ? 4,814.244 MG/Yr

WATER LOSSES (Water Supplied - Authorized Consumption) 124.597 MG/Yr

Apparent Losses

					Pcnt:	Value:	
Unauthorized consumption:	+ ?		12.347	MG/Yr	0.25%		MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	+ ?	4	96.970	MG/Yr	2.00%		MG/Yr
Systematic data handling errors:	+ ?		10.919	MG/Yr	0.25%		MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: ? 120.236 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: ? 4.361 MG/Yr

WATER LOSSES: 124.597 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: ? 570.277 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	+ ?	7	339.0	miles
Number of active AND inactive service connections:	+ ?	8	31,965	
Service connection density:	?		94	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: + ? (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: + ? 7 75.0 psi

COST DATA

Total annual cost of operating water system:	+ ?	10	$31,045,000	$/Year	
Customer retail unit cost (applied to Apparent Losses):	+ ?	10	$2.61	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	+ ?	9	$3,489.30	$/Million gallons	☑ Use Customer Retail Unit Cost to value real losses

Retail costs are less than (or equal to) production costs; please review and correct if necessary

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 54 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: Volume from own sources
2: Billed unmetered
3: Customer metering inaccuracies

APPENDIX F

DWR Recommended - SB X7-7 Tables

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SB X7-7 Table 0: Units of Measure Used in UWMP* *(select one from the drop down list)*
Million Gallons
**The unit of measure must be consistent with 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	6,612	Million Gallons
	2008 total volume of delivered recycled water	0	Million Gallons
	2008 recycled water as a percent of total deliveries	0.00%	Percent
	Number of years in baseline period[1, 2]	10	Years
	Year beginning baseline period range	1999	
	Year ending baseline period range[3]	2008	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2004	
	Year ending baseline period range[4]	2008	

[1] If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period. [2] The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.

[3] The ending year must be between December 31, 2004 and December 31, 2010.

[4] The ending year must be between December 31, 2007 and December 31, 2010.

NOTES:

SB X7-7 Table 2: Method for Population Estimates	
Method Used to Determine Population (may check more than one)	
☑	**1. Department of Finance** (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
☐	**2. Persons-per-Connection Method**
☐	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review
NOTES:	

SB X7-7 Table 3: Service Area Population		
Year		**Population**
10 to 15 Year Baseline Population		
Year 1	1999	86,408
Year 2	2000	90,091
Year 3	2001	92,942
Year 4	2002	96,343
Year 5	2003	98,467
Year 6	2004	100,042
Year 7	2005	99,713
Year 8	2006	98,995
Year 9	2007	99,098
Year 10	2008	99,854
Year 11		
Year 12		
Year 13		
Year 14		
Year 15		
5 Year Baseline Population		
Year 1	2004	100,042
Year 2	2005	99,713
Year 3	2006	98,995
Year 4	2007	99,098
Year 5	2008	99,854
2015 Compliance Year Population		
2015		108,298
NOTES:		

SB X7-7 Table 4: Annual Gross Water Use *								
Baseline Year *Fm SB X7-7 Table 3*		**Volume Into Distribution System** *This column will remain blank until SB X7-7 Table 4-A is completed.*	**Deductions**					**Annual Gross Water Use**
			Exported Water	**Change in Dist. System Storage** (+/-)	**Indirect Recycled Water** *This column will remain blank until SB X7-7 Table 4-B is completed.*	**Water Delivered for Agricultural Use**	**Process Water** *This column will remain blank until SB X7-7 Table 4-D is completed.*	
10 to 15 Year Baseline - Gross Water Use								
Year 1	1999	5,899			-		-	5,899
Year 2	2000	6,020			-		-	6,020
Year 3	2001	6,483			-		-	6,483
Year 4	2002	6,639			-		-	6,639
Year 5	2003	6,396			-		-	6,396
Year 6	2004	6,774			-		-	6,774
Year 7	2005	6,660			-		-	6,660
Year 8	2006	6,388			-		-	6,388
Year 9	2007	6,965			-		-	6,965
Year 10	2008	6,612			-		-	6,612
Year 11	0	-			-		-	-
Year 12	0	-			-		-	-
Year 13	0	-			-		-	-
Year 14	0	-			-		-	-
Year 15	0	-			-		-	-
10 - 15 year baseline average gross water use								**6,484**
5 Year Baseline - Gross Water Use								
Year 1	2004	6,774			-		-	6,774
Year 2	2005	6,660			-		-	6,660
Year 3	2006	6,388			-		-	6,388
Year 4	2007	6,965			-		-	6,965
Year 5	2008	6,612			-		-	6,612
5 year baseline average gross water use								**6,680**
2015 Compliance Year - Gross Water Use								
2015		4,521	-		-		-	**4,521**

* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3

NOTES:

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Complete one table for each source.

Name of Source	Water Treatment Plant			
This water source is:				
☑	The supplier's own water source			
☐	A purchased or imported source			
Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment* *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1999	5,899		5,899
Year 2	2000	6,020		6,020
Year 3	2001	6,483		6,483
Year 4	2002	6,639		6,639
Year 5	2003	6,396		6,396
Year 6	2004	6,774		6,774
Year 7	2005	6,660		6,660
Year 8	2006	6,388		6,388
Year 9	2007	6,965		6,965
Year 10	2008	6,612		6,612
Year 11	0			-
Year 12	0			-
Year 13	0			-
Year 14	0			-
Year 15	0			-
5 Year Baseline - Water into Distribution System				
Year 1	2004	6,774		6,774
Year 2	2005	6,660		6,660
Year 3	2006	6,388		6,388
Year 4	2007	6,965		6,965
Year 5	2008	6,612		6,612
2015 Compliance Year - Water into Distribution System				
2015		4,521		4,521

** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Annual Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1999	86,408	5,899	187
Year 2	2000	90,091	6,020	183
Year 3	2001	92,942	6,483	191
Year 4	2002	96,343	6,639	189
Year 5	2003	98,467	6,396	178
Year 6	2004	100,042	6,774	186
Year 7	2005	99,713	6,660	183
Year 8	2006	98,995	6,388	177
Year 9	2007	99,098	6,965	193
Year 10	2008	99,854	6,612	181
Year 11	0	-	-	
Year 12	0	-	-	
Year 13	0	-	-	
Year 14	0	-	-	
Year 15	0	-	-	
10-15 Year Average Baseline GPCD				**185**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2004	100,042	6,774	186
Year 2	2005	99,713	6,660	183
Year 3	2006	98,995	6,388	177
Year 4	2007	99,098	6,965	193
Year 5	2008	99,854	6,612	181
5 Year Average Baseline GPCD				**184**
2015 Compliance Year GPCD				
2015		108,298	4,521	**114**
NOTES:				

SB X7-7 Table 6: Gallons per Capita per Day *Summary From Table SB X7-7 Table 5*	
10-15 Year Baseline GPCD	185
5 Year Baseline GPCD	184
2015 Compliance Year GPCD	114
NOTES:	

SB X7-7 Table 7: 2020 Target Method *Select Only One*		
Target Method		Supporting Documentation
☐	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D *Contact DWR for these tables*
☑	Method 3	SB X7-7 Table 7-E
☐	Method 4	Method 4 Calculator
NOTES:		

SB X7-7 Table 7-A: Target Method 1 20% Reduction	
10-15 Year Baseline GPCD	**2020 Target GPCD**
185	**148**
NOTES:	

SB X7-7 Table 7-E: Target Method 3				
Agency May Select More Than One as Applicable	Percentage of Service Area in This Hydrological Region	Hydrologic Region	"2020 Plan" Regional Targets	Method 3 Regional Targets (95%)
☐		North Coast	137	130
☐		North Lahontan	173	164
☐		Sacramento River	176	167
☐		San Francisco Bay	131	124
☑	100%	San Joaquin River	174	165
☐		Central Coast	123	117
☐		Tulare Lake	188	179
☐		South Lahontan	170	162
☐		South Coast	149	142
☐		Colorado River	211	200
Target *(If more than one region is selected, this value is calculated.)*				**165**

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**
184	175	165	**165**

[1] Maximum 2020 Target is 95% of the 5 Year Baseline GPCD *[2] 2020 Target is calculated based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target.*

NOTES:

SB X7-7 Table 8: 2015 Interim Target GPCD		
Confirmed 2020 Target *Fm SB X7-7 Table 7-F*	10-15 year Baseline GPCD *Fm SB X7-7 Table 5*	**2015 Interim Target GPCD**
165	185	**175**
NOTES:		

SB X7-7 Table 9: 2015 Compliance								
		Optional Adjustments *(in GPCD)*						
		Enter "0" if Adjustment Not Used						
Actual 2015 GPCD	2015 Interim Target GPCD	Extraordinary Events	Weather Normalization	Economic Adjustment	TOTAL Adjustments	Adjusted 2015 GPCD	2015 GPCD *(Adjusted if applicable)*	**Did Supplier Achieve Targeted Reduction for 2015?**
114	175	-	-	-	-	114	114	**YES**

NOTES:

APPENDIX G

CCWD Supply Reliability Information

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CONTRA COSTA
WATER DISTRICT

Board of Directors
Joseph L. Campbell
President
Lisa M. Borba
Vice President
Bette Boatmun
John A. Burgh
Connstance Holdaway

General Manager
Jerry Brown

February 16, 2016

Mr. Tim Coley
Water Treatment Supervisor
City of Antioch
P.O. Box 5007
Antioch, CA 94509

Subject: 2015 Urban Water Management Plan, Supply Reliability Analysis and Senate Bill x7-7 Requirements

Dear Mr. Coley:

The Contra Costa Water District (District) is currently preparing an update to its Urban Water Management Plan (UWMP). In conformance with California Water Code Division 5, Part 2.6, Section 10635, the District has prepared an assessment of its water supply reliability. This analysis is being provided to all wholesale municipal customers of the District for use in the preparation of their UWMPs.

Table 1 provides water supply reliability information as a percentage of demand. For example, in the year 2040, the District anticipates it could supply at least 85 percent of its municipal customers' demands in the third year of a multiple year drought. The water supply reliability goal approved by the District's Board of Directors is to meet 100 percent of demand in normal years and at least 85 percent of demand during drought conditions. The remaining 15 percent would be met by a combination of short-term water purchases and a short-term conservation program.

Table 1 Water Supply Reliability Information (% of Demand)

Year Type	2020	2025	2030	2035	2040
Normal Year	100%	100%	100%	100%	100%
Single-Dry Year	100%	100%	100%	100%	100%
Multi-Year Drought, Year 1	100%	100%	100%	100%	100%
Multi-Year Drought, Year 2	100%	100%	100%	98%	94%
Multi-Year Drought, Year 3	90%	90%	90%	88%	85%

Table 2 provides the minimum water supply available in the next three years, assuming continuing drought conditions. As shown, the District anticipates it could supply up to 75 percent of its municipal customers' demands in the next three years if drought conditions continue and current statewide conservation measures remain in effect. This level represents a scenario in which water supplies are available to meet minimum public health and safety goals.

Table 2 Minimum Supply Next Three Years (% of Demand)

	2016	2017	2018
Water supply assuming continuing drought conditions	75%	75%	75%

Additionally, the District and its wholesale municipal customers are required to comply with Senate Bill x7-7 (SBx7-7), which requires water suppliers to report their 2015 water use target/compliance and 2020 water use target in their 2015 UWMPs. Water suppliers can comply with SBx7-7 individually and/or through a regional alliance. As discussed during our meeting in November 2015, the District will prepare a SBx7-7 analysis for its regional alliance, which consists of the District and its wholesale municipal customers (Cities of Martinez, Antioch, and Pittsburg, Diablo Water District, and Golden State Water Company). Each agency is required to report its individual water use target, and include a statement in its UWMP that the agency is a member of the District's regional alliance. This allows the agency to comply with SBx7-7 on an individual or regional basis. The District will submit a letter to the Department of Water Resources with the list of members in its regional alliance.

We will follow up this letter with a phone call to you to discuss any questions or concerns you may have about the information provided in this letter. If you have any questions prior to hearing from our office, please feel free to contact me at (925) 688-8127.

Sincerely,

Kimberly Lin, P.E.
Senior Engineer

APPENDIX H

Water Conservation Ordinances

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STAFF REPORT TO THE CITY COUNCIL

DATE: Regular Meeting of April 28, 2015

TO: Honorable Mayor and Members of the City Council

SUBMITTED BY: Ron Bernal, Director of Public Works/City Engineer RDB

SUBJECT: Drought/Water Conservation

RECOMMENDED ACTION

It is recommended that the City Council provide direction and make a motion to set a public hearing for May 12, 2015 to consider adopting mandatory water conservation measures due to ongoing drought conditions (Attachment A).

STRATEGIC PURPOSE

In order to meet the requirements of recent restrictions placed on water agencies by Governor Jerry Brown's Executive Order B-29-15 (Attachment C); Contra Costa Water District's (CCWD) most recent requirement that water customers meet water use reductions of 25%; and to comply with the State Water Resources Control Board (SWRCB) Emergency Regulations for Drought Emergency Water Conservation, dated March 27, 2015 and effective May 12, 2015; the Public Works Department is asking the City Council to implement Stage III of the City's Water Shortage Contingency Plan adopted in June 2011 as part of the City's Urban Water Management Plan, which mandates conservation rules. This supports:

- Strategy K-1 to reduce water usage; and
- Strategy K-2 to protect the City's Water Rights and deliver high quality water to our customers.

FISCAL IMPACT

Executive Order B-29-15, issued on April 1, 2015, requires urban water suppliers develop rate structures including fees and penalties to maximize water conservation consistent with statewide water restrictions. Stage III of the City's Water Shortage Contingency Plan allows for rate changes to be implemented to penalize excess usage. The City is in the process of revising its rate structure which includes penalties for excess usage/incentives for conservation.

DISCUSSION

Emergency Regulations for Drought Emergency Water Conservation dated March 27, 2015, issued by the SWRCB require large urban water suppliers serving more than 3,000 connections do the following:

A

- Impose restrictions on outdoor irrigation;
- Notify customers of leaks within the customers control;
- Report on water use monthly; and
- Report on compliance and enforcement.

Water agencies must have a drought program addressing all of the above requirements in place by May 12, 2015. In order to comply, the Public Works Department is required to initiate Stage III of the City's Water Shortage Contingency Plan from the City's adopted Urban Water Management Plan. Those mandatory conservation rules are:

- During Stage III of a water supply shortage, the shortage is deemed severe at 20% to 35%, and conservation consists of allotments and mandatory conservation rules.
- This phase becomes effective upon notification by the City that water usage is to be reduced by a mandatory percentage.
- Violations of prohibited activities are punishable by fines of up to $500 for each day in which the violation occurs.

The SWRCB can issue cease and desist orders against water agencies that do not impose mandatory outdoor irrigation restrictions upon their customers. Water suppliers that violate cease and desist orders are subject to civil liability of up to $10,000 a day.

Water Use Reduction Requirements

The Governor's Executive Order prescribes 25% reduction across the state with reductions proportionate to relative per capita 2013 water usage. While the SWRCB has not yet issued its final determination on the reduction tiers, its preliminary assessment indicates the City's program is in the 25% tier. The Program proposes to apply the 25% across all customer classes with a pricing adjustment being applied to those that are using water beyond efficient levels for public health and safety. Customer outreach and public education will highlight the many resources available to help customers save both water and money.

The City will require all its customers to reduce usage by 25% with a focus on outdoor irrigation. Attachment A identifies proposed mandatory irrigation restrictions and proposed fines, allowing customers to only irrigate three days per calendar week. Customers will be advised of their watering schedule by letter. The days per week will be determined by odd/even addresses. These proposed actions are necessary to address regulatory mandates affecting water operations.

Council adopted prohibitions with 15% conservation measures by Resolution (2014/79) on August 18, 2014; and the following prohibitions are identified in the City's Municipal Code §6-10-04 Nonessential Use of Water Prohibited: (A) At all times, no person shall use any water provided by the city for a nonessential purpose. (B) For the purposes of this chapter, each of the following is declared a nonessential use of water:

1. Permitting water to flow onto a sidewalk, driveway or street, or escape down a gutter, ditch or other service drain;

2. Outside watering that results in excessive flooding or runoff into a gutter, drain, walkway or street;

3. Using city-furnished water for non-recirculating decorative fountains or filling of decorative lakes or ponds;
4. Washing of paved or other hard surface areas, including sidewalks, walkways, driveways, patios and parking areas with city-furnished water;
5. Failing to repair a controllable leak of water and/or
6. Using a hose without an automatic shutoff nozzle.

In order to comply with the most recent mandates from SWRCB and meet water use reductions of 25%, the Public Works Department is updating the list of Water Use Prohibitions to be considered by Council for adoption by resolution after a Public Hearing on May 12.

Water Use Prohibitions

Single Family and Multi-Family Residential Customers:

a. Watering of outdoor landscapes in a manner that causes excessive runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures.

b. *Watering of outdoor landscapes during and up to 48 hours after measurable rainfall.

c. *Watering of outdoor landscapes more than three days per week.

d. *Watering of outdoor landscapes during the daylight hours of 9:00 am – 5:00 pm.

e. Washing a vehicle, trailer or boat using a hose without a shut off nozzle.

f. Washing paved or other hard-surfaced areas, including sidewalks, walkways, driveways, patios, and parking areas.

g. Use of water for non-recirculating decorative fountains or filling decorative lakes or ponds.

h. Using a hose without an automatic shutoff nozzle.

i. Failing to repair a controllable leak.

Non-Residential Customers:

a. Watering of outdoor landscapes in a manner that causes excessive runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures.

b. *Watering of outdoor landscapes during and up to 48 hours after measurable rainfall.

c. *Watering of outdoor landscapes more than three days per week unless an exception is granted by the City.

d. *Watering of outdoor landscapes during the daylight hours of 9:00 am – 5:00 pm.

e. Washing a vehicle, trailer or boat using a hose without a shut off nozzle.

f. Washing paved or other hard-surfaced areas, including sidewalks, walkways, driveways, patios, and parking areas.

g. Use of water for non-recirculating decorative fountains or filling decorative lakes or ponds.

h. Using a hose without an automatic shutoff nozzle.

i. Failing to repair a controllable leak.

j. *Serving of drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served and/or purchased.

k. *Operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. A notice shall be prominently displayed in each bathroom.

*New prohibitions to those already adopted by Council

Fines for Violations of Prohibitions

Fines for violations of prohibitions (infractions under the Antioch Municipal Code) will be as follows:

Fine for first violation:	$100.00/day
Fine for second violation:	$200.00/day
Fine for third and subsequent violations	$500.00/day

Water Conservation Incentives

Contra Costa Water District (CCWD) offers several rebate and incentive programs to help customers improve their water use efficiency. As the City of Antioch purchases raw water from CCWD, Antioch's residents are eligible to participate in these programs:

- Residential High-Efficiency Clothes Washer Rebates
- Water-Efficient Landscape Rebates
- Commercial High-Efficiency Clothes Washer Rebates
- Smart Sprinkler Timer Rebates
- Commercial Irrigation Equipment Rebates

More information about these offers is available on CCWD's website: www.ccwater.com

Next Steps

Upon receipt of Council's direction, as necessary, staff will revise, modify or add restrictions and present this information to the Council at a noticed Public Hearing on May 12, 2015. At this hearing, by resolution, the Council will be establishing the City's drought and water conservation mandates and establishing the ability to fine individuals who violate the mandates.

The State Water Resources Control Board has not yet adopted additional restrictions outlined in Executive Order B-29-15. If these or other restrictions are adopted by the State, staff will bring modifications for Council consideration and adoption.

ATTACHMENTS

A. Restrictions and Penalties
B. News Release from CCWD
C. Executive Order B-29-15

Water Use Prohibitions and Fines for Violations

Attachment A

Water Use Prohibitions Single Family and Multi-Family Residential Customers:

a. Watering of outdoor landscapes in a manner that causes excessive runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures.

b. *Watering of outdoor landscapes during and up to 48 hours after measurable rainfall.

c. *Watering of outdoor landscapes more than three days per week.

d. *Watering of outdoor landscapes during the daylight hours of 9:00 am – 5:00 pm.

e. Washing a vehicle, trailer or boat using a hose without a shut off nozzle.

f. Washing paved or other hard-surfaced areas, including sidewalks, walkways, driveways, patios, and parking areas.

g. Use of water for non-recirculating decorative fountains or filling decorative lakes or ponds.

h. Using a hose without an automatic shutoff nozzle.

i. Failing to repair a controllable leak of water.

Water Use Prohibitions Non-Residential Customers:

a. Watering of outdoor landscapes in a manner that causes excessive runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures.

b. *Watering of outdoor landscapes during and up to 48 hours after measurable rainfall.

c. *Watering of outdoor landscapes more than three days per week.

d. *Watering of outdoor landscapes during the daylight hours of 9:00 am – 5:00 pm.

e. Washing a vehicle, trailer or boat using a hose without a shut off nozzle.

f. Washing paved or other hard-surfaced areas, including sidewalks, walkways, driveways, patios, and parking areas.

g. Use of water for non-recirculating decorative fountains or filling decorative lakes or ponds.

h. Using a hose without an automatic shutoff nozzle.

i. Failing to repair a controllable leak of water.

j. *Serving of drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served and/or purchased.

k. *Operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. A notice shall be prominently displayed in each bathroom.

*New prohibitions to those already adopted by Council

Fines for Violations of Prohibitions

Fine for first offense:	$100.00/day
Fine for second offense:	$200.00/day
Fine for third and each subsequent offense:	$500.00/day

ATTACHMENT "B"

News Release

CONTRA COSTA WATER DISTRICT

For Immediate Release: April 16, 2014
Contact: Jennifer Allen, 925-688-8041 (office) / 925-297-9739 (cell)

CCWD Adopts 25% Drought Program Consistent with State Mandate/Prohibitions

Continued drought conditions prompt unprecedented action locally and statewide

CONCORD - On April 15, the Contra Costa Water District (CCWD) Board of Directors unanimously approved an update to their existing drought program to now require 25 percent water use conservation and implement additional prohibitions deemed wasteful during drought times. This update responds to the Governor's order announced on April 1 mandating a 25 percent reduction in water use statewide; this statewide mandate on water conservation is a first in California.

While California is experiencing serious continued drought conditions, local agencies are putting together updated programs to encourage conservation. The CCWD Board of Directors approved updates to their program requiring 25 percent conservation and implementing additional prohibitions on wasteful water use during a drought - such as limiting outdoor irrigation to no more than twice a week.

In addition, at a public hearing on June 3, the Board will consider a temporary pricing adjustment on the unit cost of water, a fine for violations of the prohibitions, and adjusting the baseline to 2013 water use - all in compliance with the state regulations. As proposed, the temporary pricing adjustment would only apply to households using over 200 gallons per day and would end once the emergency order is lifted.

Beyond local conservation programs, the state is taking action to implement projects intended to encourage conservation. The Save Our Water campaign is being broadcast statewide.

In an effort to protect water quality in the Delta for water users and fish, the state is moving forward with a rock barrier that would physically help deter sea water intrusion into the southern part of the Delta. Why should CCWD care about this barrier? It all comes down to water quality. CCWD's water intakes are in the Delta, and salinity intrusion from the Bay is an issue for water quality. With drought conditions, less fresh water is available to flow through the Delta. While this temporary barrier could cause temporary inconveniences for those using those waterways, CCWD supports the decision to install the barrier as the water quality implications could have longer term impacts on Delta water users, fish, the environment, etc... The last time the state did this was during the 1977 drought.

All said, this drought is serious and agencies are implementing actions that are necessary to protect residents and the environment. Some are unprecedented, but so are the drought conditions statewide.

###

The Contra Costa [illegible] to approx[illegible] people in Central and Easte[illegible] County. CCWD provides [illegible] Clyde, Co[illegible] Pacheco, Port Costa and parts of Martinez [illegible] Walnut Creek. [illegible] CCWD sells wholesale treated water to the city of Antioch and the Golden State Water Company. In Bay Point, CCWD [illegible] at its Bedford Water Treatment Plant in Oakley. [illegible] to the D[illegible] (Oakley), [illegible] State Water Company in Bay Point and the city of [illegible] CCWD [illegible] treated water to the cities of Antioch [illegible] and [illegible] customers.

ATTACHMENT "C"

Executive Department
State of California

EXECUTIVE ORDER B-29-15

WHEREAS on January 17, 2014, I proclaimed a State of Emergency to exist throughout the State of California due to severe drought conditions; and

WHEREAS on April 25, 2014, I proclaimed a Continued State of Emergency to exist throughout the State of California due to the ongoing drought; and

WHEREAS California's water supplies continue to be severely depleted despite a limited amount of rain and snowfall this winter, with record low snowpack in the Sierra Nevada mountains, decreased water levels in most of California's reservoirs, reduced flows in the state's rivers and shrinking supplies in underground water basins; and

WHEREAS the severe drought conditions continue to present urgent challenges including: drinking water shortages in communities across the state, diminished water for agricultural production, degraded habitat for many fish and wildlife species, increased wildfire risk, and the threat of saltwater contamination to fresh water supplies in the Sacramento-San Joaquin Bay Delta; and

WHEREAS a distinct possibility exists that the current drought will stretch into a fifth straight year in 2016 and beyond; and

WHEREAS new expedited actions are needed to reduce the harmful impacts from water shortages and other impacts of the drought; and

WHEREAS the magnitude of the severe drought conditions continues to present threats beyond the control of the services, personnel, equipment, and facilities of any single local government and require the combined forces of a mutual aid region or regions to combat; and

WHEREAS under the provisions of section 8558(b) of the Government Code, I find that conditions of extreme peril to the safety of persons and property continue to exist in California due to water shortage and drought conditions with which local authority is unable to cope; and

WHEREAS under the provisions of section 8571 of the California Government Code, I find that strict compliance with various statutes and regulations specified in this order would prevent, hinder, or delay the mitigation of the effects of the drought.

NOW, THEREFORE, I, EDMUND G. BROWN JR., Governor of the State of California, in accordance with the authority vested in me by the Constitution and statutes of the State of California, in particular Government Code sections 8567 and 8571 of the California Government Code, do hereby issue this Executive Order, effective immediately.

IT IS HEREBY ORDERED THAT:

1. The orders and provisions contained in my January 17, 2014 Proclamation, my April 25, 2014 Proclamation, and Executive Orders B-26-14 and B-28-14 remain in full force and effect except as modified herein.

SAVE WATER

2. The State Water Resources Control Board (Water Board) shall impose restrictions to achieve a statewide 25% reduction in potable urban water usage through February 28, 2016. These restrictions will require water suppliers to California's cities and towns to reduce usage as compared to the amount used in 2013. These restrictions should consider the relative per capita water usage of each water suppliers' service area, and require that those areas with high per capita use achieve proportionally greater reductions than those with low use. The California Public Utilities Commission is requested to take similar action with respect to investor-owned utilities providing water services.

3. The Department of Water Resources (the Department) shall lead a statewide initiative, in partnership with local agencies, to collectively replace 50 million square feet of lawns and ornamental turf with drought tolerant landscapes. The Department shall provide funding to allow for lawn replacement programs in underserved communities, which will complement local programs already underway across the state.

4. The California Energy Commission, jointly with the Department and the Water Board, shall implement a time-limited statewide appliance rebate program to provide monetary incentives for the replacement of inefficient household devices.

5. The Water Board shall impose restrictions to require that commercial, industrial, and institutional properties, such as campuses, golf courses, and cemeteries, immediately implement water efficiency measures to reduce potable water usage in an amount consistent with the reduction targets mandated by Directive 2 of this Executive Order.

6. The Water Board shall prohibit irrigation with potable water of ornamental turf on public street medians.

7. The Water Board shall prohibit irrigation with potable water outside of newly constructed homes and buildings that is not delivered by drip or microspray systems.

C2

8. The Water Board shall direct urban water suppliers to develop rate structures and other pricing mechanisms, including but not limited to surcharges, fees, and penalties, to maximize water conservation consistent with statewide water restrictions. The Water Board is directed to adopt emergency regulations, as it deems necessary, pursuant to Water Code section 1058.5 to implement this directive. The Water Board is further directed to work with state agencies and water suppliers to identify mechanisms that would encourage and facilitate the adoption of rate structures and other pricing mechanisms that promote water conservation. The California Public Utilities Commission is requested to take similar action with respect to investor-owned utilities providing water services.

INCREASE ENFORCEMENT AGAINST WATER WASTE

9. The Water Board shall require urban water suppliers to provide monthly information on water usage, conservation, and enforcement on a permanent basis.

10. The Water Board shall require frequent reporting of water diversion and use by water right holders, conduct inspections to determine whether illegal diversions or wasteful and unreasonable use of water are occurring, and bring enforcement actions against illegal diverters and those engaging in the wasteful and unreasonable use of water. Pursuant to Government Code sections 8570 and 8627, the Water Board is granted authority to inspect property or diversion facilities to ascertain compliance with water rights laws and regulations where there is cause to believe such laws and regulations have been violated. When access is not granted by a property owner, the Water Board may obtain an inspection warrant pursuant to the procedures set forth in Title 13 (commencing with section 1822.50) of Part 3 of the Code of Civil Procedure for the purposes of conducting an inspection pursuant to this directive.

11. The Department shall update the State Model Water Efficient Landscape Ordinance through expedited regulation. This updated Ordinance shall increase water efficiency standards for new and existing landscapes through more efficient irrigation systems, greywater usage, onsite storm water capture, and by limiting the portion of landscapes that can be covered in turf. It will also require reporting on the implementation and enforcement of local ordinances, with required reports due by December 31, 2015. The Department shall provide information on local compliance to the Water Board, which shall consider adopting regulations or taking appropriate enforcement actions to promote compliance. The Department shall provide technical assistance and give priority in grant funding to public agencies for actions necessary to comply with local ordinances.

12. Agricultural water suppliers that supply water to more than 25,000 acres shall include in their required 2015 Agricultural Water Management Plans a detailed drought management plan that describes the actions and measures the supplier will take to manage water demand during drought. The Department shall require those plans to include quantification of water supplies and demands for 2013, 2014, and 2015 to the extent data is available. The Department will provide technical assistance to water suppliers in preparing the plans.

C3

13. Agricultural water suppliers that supply water to 10,000 to 25,000 acres of irrigated lands shall develop Agricultural Water Management Plans and submit the plans to the Department by July 1, 2016. These plans shall include a detailed drought management plan and quantification of water supplies and demands in 2013, 2014, and 2015, to the extent that data is available. The Department shall give priority in grant funding to agricultural water suppliers that supply water to 10,000 to 25,000 acres of land for development and implementation of Agricultural Water Management Plans.

14. The Department shall report to Water Board on the status of the Agricultural Water Management Plan submittals within one month of receipt of those reports.

15. Local water agencies in high and medium priority groundwater basins shall immediately implement all requirements of the California Statewide Groundwater Elevation Monitoring Program pursuant to Water Code section 10933. The Department shall refer noncompliant local water agencies within high and medium priority groundwater basins to the Water Board by December 31, 2015, which shall consider adopting regulations or taking appropriate enforcement to promote compliance.

16. The California Energy Commission shall adopt emergency regulations establishing standards that improve the efficiency of water appliances, including toilets, urinals, and faucets available for sale and installation in new and existing buildings.

INVEST IN NEW TECHNOLOGIES

17. The California Energy Commission, jointly with the Department and the Water Board, shall implement a Water Energy Technology (WET) program to deploy innovative water management technologies for businesses, residents, industries, and agriculture. This program will achieve water and energy savings and greenhouse gas reductions by accelerating use of cutting-edge technologies such as renewable energy-powered desalination, integrated on-site reuse systems, water-use monitoring software, irrigation system timing and precision technology, and on-farm precision technology.

STREAMLINE GOVERNMENT RESPONSE

18. The Office of Emergency Services and the Department of Housing and Community Development shall work jointly with counties to provide temporary assistance for persons moving from housing units due to a lack of potable water who are served by a private well or water utility with less than 15 connections, and where all reasonable attempts to find a potable water source have been exhausted.

19. State permitting agencies shall prioritize review and approval of water infrastructure projects and programs that increase local water supplies, including water recycling facilities, reservoir improvement projects, surface water treatment plants, desalination plants, stormwater capture, and greywater systems. Agencies shall report to the Governor's Office on applications that have been pending for longer than 90 days.

C4

20. The Department shall take actions required to plan and, if necessary, implement Emergency Drought Salinity Barriers in coordination and consultation with the Water Board and the Department of Fish and Wildlife at locations within the Sacramento - San Joaquin delta estuary. These barriers will be designed to conserve water for use later in the year to meet state and federal Endangered Species Act requirements, preserve to the extent possible water quality in the Delta, and retain water supply for essential human health and safety uses in 2015 and in the future.

21. The Water Board and the Department of Fish and Wildlife shall immediately consider any necessary regulatory approvals for the purpose of installation of the Emergency Drought Salinity Barriers.

22. The Department shall immediately consider voluntary crop idling water transfer and water exchange proposals of one year or less in duration that are initiated by local public agencies and approved in 2015 by the Department subject to the criteria set forth in Water Code section 1810.

23. The Water Board will prioritize new and amended safe drinking water permits that enhance water supply and reliability for community water systems facing water shortages or that expand service connections to include existing residences facing water shortages. As the Department of Public Health's drinking water program was transferred to the Water Board, any reference to the Department of Public Health in any prior Proclamation or Executive Order listed in Paragraph 1 is deemed to refer to the Water Board.

24. The California Department of Forestry and Fire Protection shall launch a public information campaign to educate the public on actions they can take to help to prevent wildfires including the proper treatment of dead and dying trees. Pursuant to Government Code section 8645, $1.2 million from the State Responsibility Area Fire Prevention Fund (Fund 3063) shall be allocated to the California Department of Forestry and Fire Protection to carry out this directive.

25. The Energy Commission shall expedite the processing of all applications or petitions for amendments to power plant certifications issued by the Energy Commission for the purpose of securing alternate water supply necessary for continued power plant operation. Title 20, section 1769 of the California Code of Regulations is hereby waived for any such petition, and the Energy Commission is authorized to create and implement an alternative process to consider such petitions. This process may delegate amendment approval authority, as appropriate, to the Energy Commission Executive Director. The Energy Commission shall give timely notice to all relevant local, regional, and state agencies of any petition subject to this directive, and shall post on its website any such petition.

C5

26. For purposes of carrying out directives 2–9, 11, 16–17, 20–23, and 25, Division 13 (commencing with section 21000) of the Public Resources Code and regulations adopted pursuant to that Division are hereby suspended. This suspension applies to any actions taken by state agencies, and for actions taken by local agencies where the state agency with primary responsibility for implementing the directive concurs that local action is required, as well as for any necessary permits or approvals required to complete these actions. This suspension, and those specified in paragraph 9 of the January 17, 2014 Proclamation, paragraph 19 of the April 25, 2014 proclamation, and paragraph 4 of Executive Order B-26-14, shall remain in effect until May 31, 2016. Drought relief actions taken pursuant to these paragraphs that are started prior to May 31, 2016, but not completed, shall not be subject to Division 13 (commencing with section 21000) of the Public Resources Code for the time required to complete them.

27. For purposes of carrying out directives 20 and 21, section 13247 and Chapter 3 of Part 3 (commencing with section 85225) of the Water Code are suspended.

28. For actions called for in this proclamation in directive 20, the Department shall exercise any authority vested in the Central Valley Flood Protection Board, as codified in Water Code section 8521, et seq., that is necessary to enable these urgent actions to be taken more quickly than otherwise possible. The Director of the Department of Water Resources is specifically authorized, on behalf of the State of California, to request that the Secretary of the Army, on the recommendation of the Chief of Engineers of the Army Corps of Engineers, grant any permission required pursuant to section 14 of the Rivers and Harbors Act of 1899 and codified in section 48 of title 33 of the United States Code.

29. The Department is directed to enter into agreements with landowners for the purposes of planning and installation of the Emergency Drought Barriers in 2015 to the extent necessary to accommodate access to barrier locations, land-side and water-side construction, and materials staging in proximity to barrier locations. Where the Department is unable to reach an agreement with landowners, the Department may exercise the full authority of Government Code section 8572.

30. For purposes of this Executive Order, chapter 3.5 (commencing with section 11340) of part 1 of division 3 of the Government Code and chapter 5 (commencing with section 25400) of division 15 of the Public Resources Code are suspended for the development and adoption of regulations or guidelines needed to carry out the provisions in this Order. Any entity issuing regulations or guidelines pursuant to this directive shall conduct a public meeting on the regulations and guidelines prior to adopting them.

C6

31. In order to ensure that equipment and services necessary for drought response can be procured quickly, the provisions of the Government Code and the Public Contract Code applicable to state contracts, including, but not limited to, advertising and competitive bidding requirements, are hereby suspended for directives 17, 20, and 24. Approval by the Department of Finance is required prior to the execution of any contract entered into pursuant to these directives.

This Executive Order is not intended to, and does not, create any rights or benefits, substantive or procedural, enforceable at law or in equity, against the State of California, its agencies, departments, entities, officers, employees, or any other person.

I FURTHER DIRECT that as soon as hereafter possible, this Order be filed in the Office of the Secretary of State and that widespread publicity and notice be given to this Order.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 1st day of April 2015.

EDMUND G. BROWN JR.
Governor of California

ATTEST:

ALEX PADILLA
Secretary of State

C-1

Model Water Efficient Landscape Ordinance

California Code of Regulations
Title 23. Waters
Division 2. Department of Water Resources
Chapter 2.7. Model Water Efficient Landscape Ordinance

§ 490. Purpose.

(a) The State Legislature has found:
(1) that the waters of the state are of limited supply and are subject to ever increasing demands;
(2) that the continuation of California's economic prosperity is dependent on the availability of adequate supplies of water for future uses;
(3) that it is the policy of the State to promote the conservation and efficient use of water and to prevent the waste of this valuable resource;
(4) that landscapes are essential to the quality of life in California by providing areas for active and passive recreation and as an enhancement to the environment by cleaning air and water, preventing erosion, offering fire protection, and replacing ecosystems lost to development; and
(5) that landscape design, installation, maintenance and management can and should be water efficient; and
(6) that Section 2 of Article X of the California Constitution specifies that the right to use water is limited to the amount reasonably required for the beneficial use to be served and the right does not and shall not extend to waste or unreasonable method of use.
(b) Consistent with these legislative findings, the purpose of this model ordinance is to:
(1) promote the values and benefits of landscapes while recognizing the need to invest water and other resources as efficiently as possible;
(2) establish a structure for planning, designing, installing, maintaining and managing water efficient landscapes in new construction and rehabilitated projects;
(3) establish provisions for water management practices and water waste prevention for existing landscapes;
(4) use water efficiently without waste by setting a Maximum Applied Water Allowance as an upper limit for water use and reduce water use to the lowest practical amount;
(5) promote the benefits of consistent landscape ordinances with neighboring local and regional agencies;
(6) encourage local agencies and water purveyors to use economic incentives that promote the efficient use of water, such as implementing a tiered-rate structure; and
(7) encourage local agencies to designate the necessary authority that implements and enforces the provisions of the Model Water Efficient Landscape Ordinance or its local landscape ordinance.

Note: Authority cited: Section 65593, Government Code. Reference: Sections 65591, 65593, 65596, Government Code.

§ 490.1 Applicability

(a) After January 1, 2010, this ordinance shall apply to all of the following landscape projects:
(1) new construction and rehabilitated landscapes for public agency projects and private development projects with a landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check or design review;
(2) new construction and rehabilitated landscapes which are developer-installed in single-family and multi-family projects with a landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check, or design review;
(3) new construction landscapes which are homeowner-provided and/or homeowner-hired in single-family and multi-family residential projects with a total project landscape area equal to or greater than 5,000 square feet requiring a building or landscape permit, plan check or design review;

(4) existing landscapes limited to Sections 493, 493.1 and 493.2; and
(5) cemeteries. Recognizing the special landscape management needs of cemeteries, new and rehabilitated cemeteries are limited to Sections 492.4, 492.11 and 492.12; and existing cemeteries are limited to Sections 493, 493.1 and 493.2.
(b) This ordinance does not apply to:
(1) registered local, state or federal historical sites;
(2) ecological restoration projects that do not require a permanent irrigation system;
(3) mined-land reclamation projects that do not require a permanent irrigation system; or
(4) plant collections, as part of botanical gardens and arboretums open to the public.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 491. Definitions.
The terms used in this ordinance have the meaning set forth below:
(a) “applied water” means the portion of water supplied by the irrigation system to the landscape.
(b) “automatic irrigation controller” means an automatic timing device used to remotely control valves that operate an irrigation system. Automatic irrigation controllers schedule irrigation events using either evapotranspiration (weather-based) or soil moisture data.
(c) “backflow prevention device” means a safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.
(d) “Certificate of Completion” means the document required under Section 492.9.
(e) “certified irrigation designer” means a person certified to design irrigation systems by an accredited academic institution a professional trade organization or other program such as the US Environmental Protection Agency’s WaterSense irrigation designer certification program and Irrigation Association’s Certified Irrigation Designer program.
(f) “certified landscape irrigation auditor” means a person certified to perform landscape irrigation audits by an accredited academic institution, a professional trade organization or other program such as the US Environmental Protection Agency’s WaterSense irrigation auditor certification program and Irrigation Association’s Certified Landscape Irrigation Auditor program.
(g) “check valve” or “anti-drain valve” means a valve located under a sprinkler head, or other location in the irrigation system, to hold water in the system to prevent drainage from sprinkler heads when the sprinkler is off.
(h) “common interest developments” means community apartment projects, condominium projects, planned developments, and stock cooperatives per Civil Code Section 1351.
(i) “conversion factor (0.62)” means the number that converts acre-inches per acre per year to gallons per square foot per year
(j) “drip irrigation” means any non-spray low volume irrigation system utilizing emission devices with a flow rate measured in gallons per hour. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.
(k) “ecological restoration project” means a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.
(l)“effective precipitation” or “usable rainfall” (Eppt) means the portion of total precipitation which becomes available for plant growth.
(m) “emitter” means a drip irrigation emission device that delivers water slowly from the system to the soil.
(n) “established landscape” means the point at which plants in the landscape have developed significant root growth into the soil. Typically, most plants are established after one or two years of growth.
(o) “establishment period of the plants” means the first year after installing the plant in the landscape or the first two years if irrigation will be terminated after establishment. Typically, most plants are established after one or two years of growth.

(p) “Estimated Total Water Use” (ETWU) means the total water used for the landscape as described in Section 492.4.

(q) “ET adjustment factor” (ETAF) means a factor of 0.7, that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape.

A combined plant mix with a site-wide average of 0.5 is the basis of the plant factor portion of this calculation. For purposes of the ETAF, the average irrigation efficiency is 0.71. Therefore, the ET Adjustment Factor is (0.7)=(0.5/0.71). ETAF for a Special Landscape Area shall not exceed 1.0. ETAF for existing non-rehabilitated landscapes is 0.8.

(r) “evapotranspiration rate” means the quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time.

(s) “flow rate” means the rate at which water flows through pipes, valves and emission devices, measured in gallons per minute, gallons per hour, or cubic feet per second.

(t) “hardscapes” means any durable material (pervious and non-pervious).

(u) “homeowner-provided landscaping” means any landscaping either installed by a private individual for a single family residence or installed by a licensed contractor hired by a homeowner. A homeowner, for purposes of this ordinance, is a person who occupies the dwelling he or she owns. This excludes speculative homes, which are not owner-occupied dwellings.

(v) “hydrozone” means a portion of the landscaped area having plants with similar water needs. A hydrozone may be irrigated or non-irrigated.

(w) “infiltration rate” means the rate of water entry into the soil expressed as a depth of water per unit of time (e.g., inches per hour).

(x)“invasive plant species” means species of plants not historically found in California that spread outside cultivated areas and can damage environmental or economic resources. Invasive species may be regulated by county agricultural agencies as noxious species. “Noxious weeds” means any weed designated by the Weed Control Regulations in the Weed Control Act and identified on a Regional District noxious weed control list. Lists of invasive plants are maintained at the California Invasive Plant Inventory and USDA invasive and noxious weeds database.

(y) “irrigation audit” means an in-depth evaluation of the performance of an irrigation system conducted by a Certified Landscape Irrigation Auditor. An irrigation audit includes, but is not limited to: inspection, system tune-up, system test with distribution uniformity or emission uniformity, reporting overspray or runoff that causes overland flow, and preparation of an irrigation schedule.

(z) “irrigation efficiency” (IE) means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum average irrigation efficiency for purposes of this ordinance is 0.71. Greater irrigation efficiency can be expected from well designed and maintained systems.

(aa) “irrigation survey” means an evaluation of an irrigation system that is less detailed than an irrigation audit. An irrigation survey includes, but is not limited to: inspection, system test, and written recommendations to improve performance of the irrigation system.

(bb) “irrigation water use analysis” means an analysis of water use data based on meter readings and billing data.

(cc) “landscape architect” means a person who holds a license to practice landscape architecture in the state of California Business and Professions Code, Section 5615.

(dd) “landscape area” means all the planting areas, turf areas, and water features in a landscape design plan subject to the Maximum Applied Water Allowance calculation. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation).

(ee) “landscape contractor” means a person licensed by the state of California to construct, maintain, repair, install, or subcontract the development of landscape systems.
(ff) “Landscape Documentation Package” means the documents required under Section 492.3.
(gg) “landscape project” means total area of landscape in a project as defined in “landscape area” for the purposes of this ordinance, meeting requirements under Section 490.1.
(hh) “lateral line” means the water delivery pipeline that supplies water to the emitters or sprinklers from the valve.
(ii) “local agency” means a city or county, including a charter city or charter county, that is responsible for adopting and implementing the ordinance. The local agency is also responsible for the enforcement of this ordinance, including but not limited to, approval of a permit and plan check or design review of a project.
(jj) “local water purveyor” means any entity, including a public agency, city, county, or private water company that provides retail water service.
(kk) “low volume irrigation” means the application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as drip, drip lines, and bubblers. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.
(ll) “main line” means the pressurized pipeline that delivers water from the water source to the valve or outlet.
(mm) “Maximum Applied Water Allowance” (MAWA) means the upper limit of annual applied water for the established landscaped area as specified in Section 492.4. It is based upon the area’s reference evapotranspiration, the ET Adjustment Factor, and the size of the landscape area. The Estimated Total Water Use shall not exceed the Maximum Applied Water Allowance. Special Landscape Areas, including recreation areas, areas permanently and solely dedicated to edible plants such as orchards and vegetable gardens, and areas irrigated with recycled water are subject to the MAWA with an ETAF not to exceed 1.0.
(nn) “microclimate” means the climate of a small, specific area that may contrast with the climate of the overall landscape area due to factors such as wind, sun exposure, plant density, or proximity to reflective surfaces.
(oo) “mined-land reclamation projects” means any surface mining operation with a reclamation plan approved in accordance with the Surface Mining and Reclamation Act of 1975.
(pp) “mulch” means any organic material such as leaves, bark, straw, compost, or inorganic mineral materials such as rocks, gravel, and decomposed granite left loose and applied to the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature, and preventing soil erosion.
(qq) “new construction” means, for the purposes of this ordinance, a new building with a landscape or other new landscape, such as a park, playground, or greenbelt without an associated building.
(rr) “operating pressure” means the pressure at which the parts of an irrigation system are designed by the manufacturer to operate.
(ss) “overhead sprinkler irrigation systems” means systems that deliver water through the air (e.g., spray heads and rotors).
(tt) “overspray” means the irrigation water which is delivered beyond the target area.
(uu) “permit” means an authorizing document issued by local agencies for new construction or rehabilitated landscapes.
(vv) “pervious” means any surface or material that allows the passage of water through the material and into the underlying soil.
(ww) “plant factor” or “plant water use factor” is a factor , when multiplied by ETo, estimates the amount of water needed by plants. For purposes of this ordinance, the plant factor range for low water use plants is 0 to 0.3, the plant factor range for moderate water use plants is 0.4 to 0.6, and the plant

factor range for high water use plants is 0.7 to 1.0. Plant factors cited in this ordinance are derived from the Department of Water Resources 2000 publication “Water Use Classification of Landscape Species”.
(xx) “precipitation rate” means the rate of application of water measured in inches per hour.
(yy) “project applicant” means the individual or entity submitting a Landscape Documentation Package required under Section 492.3, to request a permit, plan check, or design review from the local agency. A project applicant may be the property owner or his or her designee.
(zz) “rain sensor” or “rain sensing shutoff device” means a component which automatically suspends an irrigation event when it rains.
(aaa) “record drawing” or “as-builts” means a set of reproducible drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor.
(bbb) “recreational area” means areas dedicated to active play such as parks, sports fields, and golf courses where turf provides a playing surface.
(ccc) “recycled water”, “reclaimed water”, or “treated sewage effluent water” means treated or recycled waste water of a quality suitable for non-potable uses such as landscape irrigation and water features. This water is not intended for human consumption.
(ddd) “reference evapotranspiration” or “ETo” means a standard measurement of environmental parameters which affect the water use of plants. ETo is expressed in inches per day, month, or year as represented in Section 495.1, and is an estimate of the evapotranspiration of a large field of four- to seven-inch tall, cool-season grass that is well watered. Reference evapotranspiration is used as the basis of determining the Maximum Applied Water Allowance so that regional differences in climate can be accommodated.
(eee) “rehabilitated landscape” means any re-landscaping project that requires a permit , plan check, or design review, meets the requirements of Section 490.1, and the modified landscape area is equal to or greater than 2,500 square feet, is 50% of the total landscape area, and the modifications are completed within one year.
(fff) “runoff” means water which is not absorbed by the soil or landscape to which it is applied and flows from the landscape area. For example, runoff may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or when there is a slope.
(ggg) “soil moisture sensing device” or “soil moisture sensor” means a device that measures the amount of water in the soil. The device may also suspend or initiate an irrigation event.
(hhh) “soil texture” means the classification of soil based on its percentage of sand, silt, and clay.
(iii)“Special Landscape Area” (SLA) means an area of the landscape dedicated solely to edible plants, areas irrigated with recycled water, water features using recycled water and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface.
(jjj) “sprinkler head” means a device which delivers water through a nozzle.
(kkk) “static water pressure” means the pipeline or municipal water supply pressure when water is not flowing.
(lll) “station” means an area served by one valve or by a set of valves that operate simultaneously.
(mmm) “swing joint” means an irrigation component that provides a flexible, leak-free connection between the emission device and lateral pipeline to allow movement in any direction and to prevent equipment damage.
(nnn) “turf” means a ground cover surface of mowed grass. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermudagrass, Kikuyugrass, Seashore Paspalum, St. Augustinegrass, Zoysiagrass, and Buffalo grass are warm-season grasses.
(ooo) “valve” means a device used to control the flow of water in the irrigation system.
(ppp) “water conserving plant species” means a plant species identified as having a low plant factor.
(qqq) “water feature” means a design element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied). The surface area of water features is included in

the high water use hydrozone of the landscape area. Constructed wetlands used for on-site wastewater treatment or stormwater best management practices that are not irrigated and used solely for water treatment or stormwater retention are not water features and, therefore, are not subject to the water budget calculation.
(rrr) "watering window" means the time of day irrigation is allowed.
(sss) "WUCOLS" means the Water Use Classification of Landscape Species published by the University of California Cooperative Extension, the Department of Water Resources and the Bureau of Reclamation, 2000.

Note: Authority Cited: Section 65595, Government Code. Reference: Sections 65592, 65596, Government Code.

§ 492. Provisions for New Construction or Rehabilitated Landscapes.
(a) A local agency may designate another agency, such as a water purveyor, to implement some or all of the requirements contained in this ordinance. Local agencies may collaborate with water purveyors to define each entity's specific responsibilities relating to this ordinance.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.1 Compliance with Landscape Documentation Package.
(a) Prior to construction, the local agency shall:
(1) provide the project applicant with the ordinance and procedures for permits, plan checks, or design reviews;
(2) review the Landscape Documentation Package submitted by the project applicant;
(3) approve or deny the Landscape Documentation Package;
(4) issue a permit or approve the plan check or design review for the project applicant; and
(5) upon approval of the Landscape Documentation Package, submit a copy of the Water Efficient Landscape Worksheet to the local water purveyor.
(b) Prior to construction, the project applicant shall:
(1) submit a Landscape Documentation Package to the local agency.
(c) Upon approval of the Landscape Documentation Package by the local agency, the project applicant shall:
(1) receive a permit or approval of the plan check or design review and record the date of the permit in the Certificate of Completion;
(2) submit a copy of the approved Landscape Documentation Package along with the record drawings, and any other information to the property owner or his/her designee; and
(3) submit a copy of the Water Efficient Landscape Worksheet to the local water purveyor.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.2 Penalties.
(a) A local agency may establish and administer penalties to the project applicant for non-compliance with the ordinance to the extent permitted by law.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.3 Elements of the Landscape Documentation Package.
(a) The Landscape Documentation Package shall include the following six (6) elements:
(1) project information;
(A) date
(B) project applicant
(C) project address (if available, parcel and/or lot number(s))
(D) total landscape area (square feet)
(E) project type (e.g., new, rehabilitated, public, private, cemetery, homeowner-installed)
(F) water supply type (e.g., potable, recycled, well) and identify the local retail water purveyor if the applicant is not served by a private well
(G) checklist of all documents in Landscape Documentation Package
(H) project contacts to include contact information for the project applicant and property owner
(I) applicant signature and date with statement, "I agree to comply with the requirements of the water efficient landscape ordinance and submit a complete Landscape Documentation Package".
(2) Water Efficient Landscape Worksheet;
(A) hydrozone information table
(B) water budget calculations
1. Maximum Applied Water Allowance (MAWA)
2. Estimated Total Water Use (ETWU)
(3) soil management report;
(4) landscape design plan;
(5) irrigation design plan; and
(6) grading design plan.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.4 Water Efficient Landscape Worksheet.
(a) A project applicant shall complete the Water Efficient Landscape Worksheet which contains two sections (see sample worksheet in Appendix B):
(1) a hydrozone information table (see Appendix B, Section A) for the landscape project; and
(2) a water budget calculation (see Appendix B, Section B) for the landscape project. For the calculation of the Maximum Applied Water Allowance and Estimated Total Water Use, a project applicant shall use the ETo values from the Reference Evapotranspiration Table in Appendix A. For geographic areas not covered in Appendix A, use data from other cities located nearby in the same reference evapotranspiration zone, as found in the CIMIS Reference Evapotranspiration Zones Map, Department of Water Resources, 1999.
(b) Water budget calculations shall adhere to the following requirements:
(1) The plant factor used shall be from WUCOLS. The plant factor ranges from 0 to 0.3 for low water use plants, from 0.4 to 0.6 for moderate water use plants, and from 0.7 to 1.0 for high water use plants.
(2) All water features shall be included in the high water use hydrozone and temporarily irrigated areas shall be included in the low water use hydrozone.
(3) All Special Landscape Areas shall be identified and their water use calculated as described below.
(4) ETAF for Special Landscape Areas shall not exceed 1.0.
(c) Maximum Applied Water Allowance
The Maximum Applied Water Allowance shall be calculated using the equation:

$$MAWA = (ETo)\ (0.62)\ [(0.7 \times LA) + (0.3 \times SLA)]$$

The example calculations below are hypothetical to demonstrate proper use of the equations and do not represent an existing and/or planned landscape project. The ETo values used in these calculations are from the Reference Evapotranspiration Table in Appendix A, for planning purposes only. For actual irrigation scheduling, automatic irrigation controllers are required and shall use current reference evapotranspiration data, such as from the California Irrigation Management Information System (CIMIS), other equivalent data, or soil moisture sensor data.

(1) Example MAWA calculation: a hypothetical landscape project in Fresno, CA with an irrigated landscape area of 50,000 square feet without any Special Landscape Area (SLA= 0, no edible plants, recreational areas, or use of recycled water). To calculate MAWA, the annual reference evapotranspiration value for Fresno is 51.1 inches as listed in the Reference Evapotranspiration Table in Appendix A.

MAWA = (ETo) (0.62) [(0.7 x LA) + (0.3 x SLA)]
MAWA = Maximum Applied Water Allowance (gallons per year)
ETo = Reference Evapotranspiration (inches per year)
0.62 = Conversion Factor (to gallons)
0.7 = ET Adjustment Factor (ETAF)
LA = Landscape Area including SLA (square feet)
0.3 = Additional Water Allowance for SLA
SLA = Special Landscape Area (square feet)
MAWA = (51.1 inches) (0.62) [(0.7 x 50,000 square feet) + (0.3 x 0)]
= 1,108,870 gallons per year
To convert from gallons per year to hundred-cubic-feet per year:
= 1,108,870/748 = 1,482 hundred-cubic-feet per year
(100 cubic feet = 748 gallons)

(2) In this next hypothetical example, the landscape project in Fresno, CA has the same ETo value of 51.1 inches and a total landscape area of 50,000 square feet. Within the 50,000 square foot project, there is now a 2,000 square foot area planted with edible plants. This 2,000 square foot area is considered to be a Special Landscape Area.

MAWA = (ETo) (0.62) [(0.7 x LA) + (0.3 x SLA)]
MAWA = (51.1 inches) (0.62) [(0.7 x 50,000 square feet) + (0.3 x 2,000 square feet)]
= 31.68 x [35,000 + 600] gallons per year
= 31.68 x 35,600 gallons per year
=1,127,808 gallons per year or 1,508 hundred-cubic-feet per year

(d) Estimated Total Water Use.

The Estimated Total Water Use shall be calculated using the equation below. The sum of the Estimated Total Water Use calculated for all hydrozones shall not exceed MAWA.

$$ETWU = (ETo)(0.62)\left(\frac{PF\ x\ HA}{IE} + SLA\right)$$

Where:

ETWU = Estimated Total Water Use per year (gallons)
ETo = Reference Evapotranspiration (inches)
PF = Plant Factor from WUCOLS (see Section 491)
HA = Hydrozone Area [high, medium, and low water use areas] (square feet)
SLA = Special Landscape Area (square feet)
0.62 = Conversion Factor
IE = Irrigation Efficiency (minimum 0.71)

(1) Example ETWU calculation: landscape area is 50,000 square feet; plant water use type, plant factor, and hydrozone area are shown in the table below. The ETo value is 51.1 inches per year. There are no Special Landscape Areas (recreational area, area permanently and solely dedicated to edible plants, and area irrigated with recycled water) in this example.

Hydrozone	Plant Water Use Type(s)	Plant Factor (PF)*	Hydrozone Area (HA) (square feet)	PF x HA (square feet)
1	High	0.8	7,000	5,600
2	High	0.7	10,000	7,000
3	Medium	0.5	16,000	8,000
4	Low	0.3	7,000	2,100
5	Low	0.2	10,000	2,000
			Sum	24,700

*Plant Factor from WUCOLS

$$ETWU = (51.1)(0.62)\left(\frac{24{,}700}{0.71} + 0\right)$$

= 1,102,116 gallons per year

Compare ETWU with MAWA: For this example MAWA = (51.1) (0.62) [(0.7 x 50,000) + (0.3 x 0)] = 1,108,870 gallons per year. The ETWU (1,102,116 gallons per year) is less than MAWA (1,108,870 gallons per year). In this example, the water budget complies with the MAWA.

(2) Example ETWU calculation: total landscape area is 50,000 square feet, 2,000 square feet of which is planted with edible plants. The edible plant area is considered a Special Landscape Area (SLA). The reference evapotranspiration value is 51.1 inches per year. The plant type, plant factor, and hydrozone area are shown in the table below.

Hydrozone	Plant Water Use Type(s)	Plant Factor (PF)*	Hydrozone Area (HA) (square feet)	PF x HA (square feet)
1	High	0.8	7,000	5,600
2	High	0.7	9,000	6,300
3	Medium	0.5	15,000	7,500
4	Low	0.3	7,000	2,100
5	Low	0.2	10,000	2,000
			Sum	23,500
6	SLA	1.0	2,000	2,000

*Plant Factor from WUCOLS

$$ETWU = (51.1)(0.62)\left(\frac{23{,}500}{0.71} + 2{,}000\right)$$

= (31.68) (33,099 + 2,000)

= 1,111,936 gallons per year

Compare ETWU with MAWA. For this example:
MAWA = (51.1) (0.62) [(0.7 x 50,000) + (0.3 x 2,000)]
= 31.68 x [35,000 + 600]
= 31.68 x 35,600
=1,127,808 gallons per year

The ETWU (1,111,936 gallons per year) is less than MAWA (1,127,808 gallons per year). For this example, the water budget complies with the MAWA.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.5 Soil Management Report.

(a) In order to reduce runoff and encourage healthy plant growth, a soil management report shall be completed by the project applicant, or his/her designee, as follows:
(1) Submit soil samples to a laboratory for analysis and recommendations.
(A) Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.
(B) The soil analysis may include:
1. soil texture;
2. infiltration rate determined by laboratory test or soil texture infiltration rate table;
3. pH;
4. total soluble salts;
5. sodium;
6. percent organic matter; and
7. recommendations.
(2) The project applicant, or his/her designee, shall comply with one of the following:
(A) If significant mass grading is not planned, the soil analysis report shall be submitted to the local agency as part of the Landscape Documentation Package; or
(B) If significant mass grading is planned, the soil analysis report shall be submitted to the local agency as part of the Certificate of Completion.
(3) The soil analysis report shall be made available, in a timely manner, to the professionals preparing the landscape design plans and irrigation design plans to make any necessary adjustments to the design plans.
(4) The project applicant, or his/her designee, shall submit documentation verifying implementation of soil analysis report recommendations to the local agency with Certificate of Completion.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.6 Landscape Design Plan.

(a) For the efficient use of water, a landscape shall be carefully designed and planned for the intended function of the project. A landscape design plan meeting the following design criteria shall be submitted as part of the Landscape Documentation Package.
(1) Plant Material
(A) Any plant may be selected for the landscape, providing the Estimated Total Water Use in the landscape area does not exceed the Maximum Applied Water Allowance. To encourage the efficient use of water, the following is highly recommended:
1. protection and preservation of native species and natural vegetation;
2. selection of water-conserving plant and turf species;

3. selection of plants based on disease and pest resistance;
4. selection of trees based on applicable local tree ordinances or tree shading guidelines; and
5. selection of plants from local and regional landscape program plant lists.
(B) Each hydrozone shall have plant materials with similar water use, with the exception of hydrozones with plants of mixed water use, as specified in Section 492.7(a)(2)(D).
(C) Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the project site. To encourage the efficient use of water, the following is highly recommended:
1. use the Sunset Western Climate Zone System which takes into account temperature, humidity, elevation, terrain, latitude, and varying degrees of continental and marine influence on local climate;
2. recognize the horticultural attributes of plants (i.e., mature plant size, invasive surface roots) to minimize damage to property or infrastructure [e.g., buildings, sidewalks, power lines]; and
3. consider the solar orientation for plant placement to maximize summer shade and winter solar gain.
(D) Turf is not allowed on slopes greater than 25% where the toe of the slope is adjacent to an impermeable hardscape and where 25% means 1 foot of vertical elevation change for every 4 feet of horizontal length (rise divided by run x 100 = slope percent).
(E) A landscape design plan for projects in fire-prone areas shall address fire safety and prevention. A defensible space or zone around a building or structure is required per Public Resources Code Section 4291(a) and (b). Avoid fire-prone plant materials and highly flammable mulches.
(F) The use of invasive and/or noxious plant species is strongly discouraged.
(G) The architectural guidelines of a common interest development, which include community apartment projects, condominiums, planned developments, and stock cooperatives, shall not prohibit or include conditions that have the effect of prohibiting the use of low-water use plants as a group.
(2) Water Features
(A) Recirculating water systems shall be used for water features.
(B) Where available, recycled water shall be used as a source for decorative water features.
(C) Surface area of a water feature shall be included in the high water use hydrozone area of the water budget calculation.
(D) Pool and spa covers are highly recommended.
(3) Mulch and Amendments
(A) A minimum two inch (2″) layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated.
(B) Stabilizing mulching products shall be used on slopes.
(C) The mulching portion of the seed/mulch slurry in hydro-seeded applications shall meet the mulching requirement.
(D) Soil amendments shall be incorporated according to recommendations of the soil report and what is appropriate for the plants selected (see Section 492.5).
(b) The landscape design plan, at a minimum, shall:
(1) delineate and label each hydrozone by number, letter, or other method;
(2) identify each hydrozone as low, moderate, high water, or mixed water use. Temporarily irrigated areas of the landscape shall be included in the low water use hydrozone for the water budget calculation;
(3) identify recreational areas;
(4) identify areas permanently and solely dedicated to edible plants;
(5) identify areas irrigated with recycled water;
(6) identify type of mulch and application depth;
(7) identify soil amendments, type, and quantity;
(8) identify type and surface area of water features;
(9) identify hardscapes (pervious and non-pervious);

(10) identify location and installation details of any applicable stormwater best management practices that encourage on-site retention and infiltration of stormwater. Stormwater best management practices are encouraged in the landscape design plan and examples include, but are not limited to:
(A) infiltration beds, swales, and basins that allow water to collect and soak into the ground;
(B) constructed wetlands and retention ponds that retain water, handle excess flow, and filter pollutants; and
(C) pervious or porous surfaces (e.g., permeable pavers or blocks, pervious or porous concrete, etc.) that minimize runoff.
(11) identify any applicable rain harvesting or catchment technologies (e.g., rain gardens, cisterns, etc.);
(12) contain the following statement: "I have complied with the criteria of the ordinance and applied them for the efficient use of water in the landscape design plan"; and
(13) bear the signature of a licensed landscape architect, licensed landscape contractor, or any other person authorized to design a landscape. (See Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title16 of the California Code of Regulations, and Section 6721 of the Food and Agriculture Code.)

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code and Section 1351, Civil Code.

§ 492.7 Irrigation Design Plan.
(a) For the efficient use of water, an irrigation system shall meet all the requirements listed in this section and the manufacturers' recommendations. The irrigation system and its related components shall be planned and designed to allow for proper installation, management, and maintenance. An irrigation design plan meeting the following design criteria shall be submitted as part of the Landscape Documentation Package.
(1) System
(A) Dedicated landscape water meters are highly recommended on landscape areas smaller than 5,000 square feet to facilitate water management.
(B) Automatic irrigation controllers utilizing either evapotranspiration or soil moisture sensor data shall be required for irrigation scheduling in all irrigation systems.
(C) The irrigation system shall be designed to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.
1. If the static pressure is above or below the required dynamic pressure of the irrigation system, pressure-regulating devices such as inline pressure regulators, booster pumps, or other devices shall be installed to meet the required dynamic pressure of the irrigation system.
2. Static water pressure, dynamic or operating pressure. and flow reading of the water supply shall be measured at the point of connection. These pressure and flow measurements shall be conducted at the design stage. If the measurements are not available at the design stage, the measurements shall be conducted at installation.
(D) Sensors (rain, freeze, wind, etc.), either integral or auxiliary, that suspend or alter irrigation operation during unfavorable weather conditions shall be required on all irrigation systems, as appropriate for local climatic conditions. Irrigation should be avoided during windy or freezing weather or during rain.
(E) Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be required, as close as possible to the point of connection of the water supply, to minimize water loss in case of an emergency (such as a main line break) or routine repair.

(F) Backflow prevention devices shall be required to protect the water supply from contamination by the irrigation system. A project applicant shall refer to the applicable local agency code (i.e., public health) for additional backflow prevention requirements.
(G) High flow sensors that detect and report high flow conditions created by system damage or malfunction are recommended.
(H) The irrigation system shall be designed to prevent runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.
(I) Relevant information from the soil management plan, such as soil type and infiltration rate, shall be utilized when designing irrigation systems.
(J) The design of the irrigation system shall conform to the hydrozones of the landscape design plan.
(K) The irrigation system must be designed and installed to meet, at a minimum, the irrigation efficiency criteria as described in Section 492.4 regarding the Maximum Applied Water Allowance.
(L) It is highly recommended that the project applicant or local agency inquire with the local water purveyor about peak water operating demands (on the water supply system) or water restrictions that may impact the effectiveness of the irrigation system.
(M) In mulched planting areas, the use of low volume irrigation is required to maximize water infiltration into the root zone.
(N) Sprinkler heads and other emission devices shall have matched precipitation rates, unless otherwise directed by the manufacturer's recommendations.
(O) Head to head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible distribution uniformity using the manufacturer's recommendations.
(P) Swing joints or other riser-protection components are required on all risers subject to damage that are adjacent to high traffic areas.
(Q) Check valves or anti-drain valves are required for all irrigation systems.
(R) Narrow or irregularly shaped areas, including turf, less than eight (8) feet in width in any direction shall be irrigated with subsurface irrigation or low volume irrigation system.
(S) Overhead irrigation shall not be permitted within 24 inches of any non-permeable surface. Allowable irrigation within the setback from non-permeable surfaces may include drip, drip line, or other low flow non-spray technology. The setback area may be planted or unplanted. The surfacing of the setback may be mulch, gravel, or other porous material. These restrictions may be modified if:
1. the landscape area is adjacent to permeable surfacing and no runoff occurs; or
2. the adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping; or
3. the irrigation designer specifies an alternative design or technology, as part of the Landscape Documentation Package and clearly demonstrates strict adherence to irrigation system design criteria in Section 492.7 (a)(1)(H). Prevention of overspray and runoff must be confirmed during the irrigation audit.
(T) Slopes greater than 25% shall not be irrigated with an irrigation system with a precipitation rate exceeding 0.75 inches per hour. This restriction may be modified if the landscape designer specifies an alternative design or technology, as part of the Landscape Documentation Package, and clearly demonstrates no runoff or erosion will occur. Prevention of runoff and erosion must be confirmed during the irrigation audit.
(2) Hydrozone
(A) Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.
(B) Sprinkler heads and other emission devices shall be selected based on what is appropriate for the plant type within that hydrozone.
(C) Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf.
(D) Individual hydrozones that mix plants of moderate and low water use, or moderate and high water use, may be allowed if:

1. plant factor calculation is based on the proportions of the respective plant water uses and their plant factor; or
2. the plant factor of the higher water using plant is used for calculations.
(E) Individual hydrozones that mix high and low water use plants shall not be permitted.
(F) On the landscape design plan and irrigation design plan, hydrozone areas shall be designated by number, letter, or other designation. On the irrigation design plan, designate the areas irrigated by each valve, and assign a number to each valve. Use this valve number in the Hydrozone Information Table (see Appendix B Section A). This table can also assist with the irrigation audit and programming the controller.
(b) The irrigation design plan, at a minimum, shall contain:
(1) location and size of separate water meters for landscape;
(2) location, type and size of all components of the irrigation system, including controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, pressure regulators, and backflow prevention devices;
(3) static water pressure at the point of connection to the public water supply;
(4) flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (pressure per square inch) for each station;
(5) recycled water irrigation systems as specified in Section 492.14;
(6) the following statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the irrigation design plan"; and
(7) the signature of a licensed landscape architect, certified irrigation designer, licensed landscape contractor, or any other person authorized to design an irrigation system. (See Sections 5500.1, 5615, 5641, 5641.1, 5641.2, 5641.3, 5641.4, 5641.5, 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the Food and Agricultural Code.)

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.8 Grading Design Plan.
(a) For the efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff, and water waste. A grading plan shall be submitted as part of the Landscape Documentation Package. A comprehensive grading plan prepared by a civil engineer for other local agency permits satisfies this requirement.
(1) The project applicant shall submit a landscape grading plan that indicates finished configurations and elevations of the landscape area including:
(A) height of graded slopes;
(B) drainage patterns;
(C) pad elevations;
(D) finish grade; and
(E) stormwater retention improvements, if applicable.
(2) To prevent excessive erosion and runoff, it is highly recommended that project applicants:
(A) grade so that all irrigation and normal rainfall remains within property lines and does not drain on to non-permeable hardscapes;
(B) avoid disruption of natural drainage patterns and undisturbed soil; and
(C) avoid soil compaction in landscape areas.
(3) The grading design plan shall contain the following statement: "I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the grading design plan" and shall bear the signature of a licensed professional as authorized by law.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.9 Certificate of Completion.
(a) The Certificate of Completion (see Appendix C for a sample certificate) shall include the following six (6) elements:
(1) project information sheet that contains:
(A) date;
(B) project name;
(C) project applicant name, telephone, and mailing address;
(D) project address and location; and
(E) property owner name, telephone, and mailing address;
(2) certification by either the signer of the landscape design plan, the signer of the irrigation design plan, or the licensed landscape contractor that the landscape project has been installed per the approved Landscape Documentation Package;
(A) where there have been significant changes made in the field during construction, these "as-built" or record drawings shall be included with the certification;
(3) irrigation scheduling parameters used to set the controller (see Section 492.10);
(4) landscape and irrigation maintenance schedule (see Section 492.11);
(5) irrigation audit report (see Section 492.12); and
(6) soil analysis report, if not submitted with Landscape Documentation Package, and documentation verifying implementation of soil report recommendations (see Section 492.5).
(b) The project applicant shall:
(1) submit the signed Certificate of Completion to the local agency for review;
(2) ensure that copies of the approved Certificate of Completion are submitted to the local water purveyor and property owner or his or her designee.
(c) The local agency shall:
(1) receive the signed Certificate of Completion from the project applicant;
(2) approve or deny the Certificate of Completion. If the Certificate of Completion is denied, the local agency shall provide information to the project applicant regarding reapplication, appeal, or other assistance.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.10 Irrigation Scheduling.
(a) For the efficient use of water, all irrigation schedules shall be developed, managed, and evaluated to utilize the minimum amount of water required to maintain plant health. Irrigation schedules shall meet the following criteria:
(1) Irrigation scheduling shall be regulated by automatic irrigation controllers.
(2) Overhead irrigation shall be scheduled between 8:00 p.m. and 10:00 a.m. unless weather conditions prevent it. If allowable hours of irrigation differ from the local water purveyor, the stricter of the two shall apply. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
(3) For implementation of the irrigation schedule, particular attention must be paid to irrigation run times, emission device, flow rate, and current reference evapotranspiration, so that applied water meets the Estimated Total Water Use. Total annual applied water shall be less than or equal to Maximum Applied Water Allowance (MAWA). Actual irrigation schedules shall be regulated by automatic irrigation controllers using current reference evapotranspiration data (e.g., CIMIS) or soil moisture sensor data.
(4) Parameters used to set the automatic controller shall be developed and submitted for each of the following:
(A) the plant establishment period;

(B) the established landscape; and
(C) temporarily irrigated areas.
(5) Each irrigation schedule shall consider for each station all of the following that apply:
(A) irrigation interval (days between irrigation);
(B) irrigation run times (hours or minutes per irrigation event to avoid runoff);
(C) number of cycle starts required for each irrigation event to avoid runoff;
(D) amount of applied water scheduled to be applied on a monthly basis;
(E) application rate setting;
(F) root depth setting;
(G) plant type setting;
(H) soil type;
(I) slope factor setting;
(J) shade factor setting; and
(K) irrigation uniformity or efficiency setting.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.11 Landscape and Irrigation Maintenance Schedule.
(a) Landscapes shall be maintained to ensure water use efficiency. A regular maintenance schedule shall be submitted with the Certificate of Completion.
(b) A regular maintenance schedule shall include, but not be limited to, routine inspection; adjustment and repair of the irrigation system and its components; aerating and dethatching turf areas; replenishing mulch; fertilizing; pruning; weeding in all landscape areas, and removing and obstruction to emission devices. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
(c) Repair of all irrigation equipment shall be done with the originally installed components or their equivalents.
(d) A project applicant is encouraged to implement sustainable or environmentally-friendly practices for overall landscape maintenance.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.12 Irrigation Audit, Irrigation Survey, and Irrigation Water Use Analysis.
(a) All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.
(b) For new construction and rehabilitated landscape projects installed after January 1, 2010, as described in Section 490.1:
(1) the project applicant shall submit an irrigation audit report with the Certificate of Completion to the local agency that may include, but is not limited to: inspection, system tune-up, system test with distribution uniformity, reporting overspray or run off that causes overland flow, and preparation of an irrigation schedule;
(2) the local agency shall administer programs that may include, but not be limited to, irrigation water use analysis, irrigation audits, and irrigation surveys for compliance with the Maximum Applied Water Allowance.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.13 Irrigation Efficiency.
(a) For the purpose of determining Maximum Applied Water Allowance, average irrigation efficiency is assumed to be 0.71. Irrigation systems shall be designed, maintained, and managed to meet or exceed an average landscape irrigation efficiency of 0.71.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.14 Recycled Water.
(a) The installation of recycled water irrigation systems shall allow for the current and future use of recycled water, unless a written exemption has been granted as described in Section 492.14(b).
(b) Irrigation systems and decorative water features shall use recycled water unless a written exemption has been granted by the local water purveyor stating that recycled water meeting all public health codes and standards is not available and will not be available for the foreseeable future.
(c) All recycled water irrigation systems shall be designed and operated in accordance with all applicable local and State laws.
(d) Landscapes using recycled water are considered Special Landscape Areas. The ET Adjustment Factor for Special Landscape Areas shall not exceed 1.0.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.15 Stormwater Management.
(a) Stormwater management practices minimize runoff and increase infiltration which recharges groundwater and improves water quality. Implementing stormwater best management practices into the landscape and grading design plans to minimize runoff and to increase on-site retention and infiltration are encouraged.
(b) Project applicants shall refer to the local agency or Regional Water Quality Control Board for information on any applicable stormwater ordinances and stormwater management plans.
(c) Rain gardens, cisterns, and other landscapes features and practices that increase rainwater capture and create opportunities for infiltration and/or onsite storage are recommended.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.16 Public Education.
(a) Publications. Education is a critical component to promote the efficient use of water in landscapes. The use of appropriate principles of design, installation, management and maintenance that save water is encouraged in the community.
(1) A local agency shall provide information to owners of new, single-family residential homes regarding the design, installation, management, and maintenance of water efficient landscapes.
(b) Model Homes. All model homes that are landscaped shall use signs and written information to demonstrate the principles of water efficient landscapes described in this ordinance.
(1) Signs shall be used to identify the model as an example of a water efficient landscape featuring elements such as hydrozones, irrigation equipment, and others that contribute to the overall water efficient theme.
(2) Information shall be provided about designing, installing, managing, and maintaining water efficient landscapes.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 492.17 Environmental Review.
(a) The local agency must comply with the California Environmental Quality Act (CEQA), as appropriate.

Note: Authority cited: Section 21082, Public Resources Code. Reference: Sections 21080, 21082, Public Resources Code.

§ 493. Provisions for Existing Landscapes.
(a) A local agency may designate another agency, such as a water purveyor, to implement some or all of the requirements contained in this ordinance. Local agencies may collaborate with water purveyors to define each entity's specific responsibilities relating to this ordinance.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 493.1 Irrigation Audit, Irrigation Survey, and Irrigation Water Use Analysis.
(a) This section, 493.1, shall apply to all existing landscapes that were installed before January 1, 2010 and are over one acre in size.
(1) For all landscapes in 493.1(a) that have a water meter, the local agency shall administer programs that may include, but not be limited to, irrigation water use analyses, irrigation surveys, and irrigation audits to evaluate water use and provide recommendations as necessary to reduce landscape water use to a level that does not exceed the Maximum Applied Water Allowance for existing landscapes. The Maximum Applied Water Allowance for existing landscapes shall be calculated as: MAWA = (0.8)(ETo)(LA)(0.62).
(2) For all landscapes in 493.1(a), that do not have a meter, the local agency shall administer programs that may include, but not be limited to, irrigation surveys and irrigation audits to evaluate water use and provide recommendations as necessary in order to prevent water waste.
(b) All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor.

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

§ 493.2 Water Waste Prevention.
(a) Local agencies shall prevent water waste resulting from inefficient landscape irrigation by prohibiting runoff from leaving the target landscape due to low head drainage, overspray, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, parking lots, or structures. Penalties for violation of these prohibitions shall be established locally.
(b) Restrictions regarding overspray and runoff may be modified if:
(1) the landscape area is adjacent to permeable surfacing and no runoff occurs; or
(2) the adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping.

Note: Authority cited: Section 65594, Government Code. Reference: Section 65596, Government Code.

§ 494. Effective Precipitation.
(a) A local agency may consider Effective Precipitation (25% of annual precipitation) in tracking water use and may use the following equation to calculate Maximum Applied Water Allowance:
MAWA= (ETo - Eppt) (0.62) [(0.7 x LA) + (0.3 x SLA)].

Note: Authority Cited: Section 65595, Government Code. Reference: Section 65596, Government Code.

Appendices.

Appendix A. Reference Evapotranspiration (ETo) Table.

Appendix A - Reference Evapotranspiration (ETo) Table*													
County and City	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual ETo**
ALAMEDA													
Fremont	1.5	1.9	3.4	4.7	5.4	6.3	6.7	6.0	4.5	3.4	1.8	1.5	47.0
Livermore	1.2	1.5	2.9	4.4	5.9	6.6	7.4	6.4	5.3	3.2	1.5	0.9	47.2
Oakland	1.5	1.5	2.8	3.9	5.1	5.3	6.0	5.5	4.8	3.1	1.4	0.9	41.8
Oakland Foothills	1.1	1.4	2.7	3.7	5.1	6.4	5.8	4.9	3.6	2.6	1.4	1.0	39.6
Pleasanton	0.8	1.5	2.9	4.4	5.6	6.7	7.4	6.4	4.7	3.3	1.5	1.0	46.2
Union City	1.4	1.8	3.1	4.2	5.4	5.9	6.4	5.7	4.4	3.1	1.5	1.2	44.2
ALPINE													
Markleeville	0.7	0.9	2.0	3.5	5.0	6.1	7.3	6.4	4.4	2.6	1.2	0.5	40.6
AMADOR													
Jackson	1.2	1.5	2.8	4.4	6.0	7.2	7.9	7.2	5.3	3.2	1.4	0.9	48.9
Shanandoah Valley	1.0	1.7	2.9	4.4	5.6	6.8	7.9	7.1	5.2	3.6	1.7	1.0	48.8
BUTTE													
Chico	1.2	1.8	2.9	4.7	6.1	7.4	8.5	7.3	5.4	3.7	1.7	1.0	51.7
Durham	1.1	1.8	3.2	5.0	6.5	7.4	7.8	6.9	5.3	3.6	1.7	1.0	51.1
Gridley	1.2	1.8	3.0	4.7	6.1	7.7	8.5	7.1	5.4	3.7	1.7	1.0	51.9
Oroville	1.2	1.7	2.8	4.7	6.1	7.6	8.5	7.3	5.3	3.7	1.7	1.0	51.5
CALAVERAS													
San Andreas	1.2	1.5	2.8	4.4	6.0	7.3	7.9	7.0	5.3	3.2	1.4	0.7	48.8
COLUSA													
Colusa	1.0	1.7	3.4	5.0	6.4	7.6	8.3	7.2	5.4	3.8	1.8	1.1	52.8
Williams	1.2	1.7	2.9	4.5	6.1	7.2	8.5	7.3	5.3	3.4	1.6	1.0	50.8
CONTRA COSTA													
Benicia	1.3	1.4	2.7	3.8	4.9	5.0	6.4	5.5	4.4	2.9	1.2	0.7	40.3
Brentwood	1.0	1.5	2.9	4.5	6.1	7.1	7.9	6.7	5.2	3.2	1.4	0.7	48.3
Concord	1.1	1.4	2.4	4.0	5.5	5.9	7.0	6.0	4.8	3.2	1.3	0.7	43.4
Courtland	0.9	1.5	2.9	4.4	6.1	6.9	7.9	6.7	5.3	3.2	1.4	0.7	48.0
Martinez	1.2	1.4	2.4	3.9	5.3	5.6	6.7	5.6	4.7	3.1	1.2	0.7	41.8
Moraga	1.2	1.5	3.4	4.2	5.5	6.1	6.7	5.9	4.6	3.2	1.6	1.0	44.9
Pittsburg	1.0	1.5	2.8	4.1	5.6	6.4	7.4	6.4	5.0	3.2	1.3	0.7	45.4
Walnut Creek	0.8	1.5	2.9	4.4	5.6	6.7	7.4	6.4	4.7	3.3	1.5	1.0	46.2
DEL NORTE													
Crescent City	0.5	0.9	2.0	3.0	3.7	3.5	4.3	3.7	3.0	2.0	0.9	0.5	27.7
EL DORADO													
Camino	0.9	1.7	2.5	3.9	5.9	7.2	7.8	6.8	5.1	3.1	1.5	0.9	47.3
FRESNO													
Clovis	1.0	1.5	3.2	4.8	6.4	7.7	8.5	7.3	5.3	3.4	1.4	0.7	51.4
Coalinga	1.2	1.7	3.1	4.6	6.2	7.2	8.5	7.3	5.3	3.4	1.6	0.7	50.9
Firebaugh	1.0	1.8	3.7	5.7	7.3	8.1	8.2	7.2	5.5	3.9	2.0	1.1	55.4
FivePoints	1.3	2.0	4.0	6.1	7.7	8.5	8.7	8.0	6.2	4.5	2.4	1.2	60.4
FRESNO													
Fresno	0.9	1.7	3.3	4.8	6.7	7.8	8.4	7.1	5.2	3.2	1.4	0.6	51.1
Fresno State	0.9	1.6	3.2	5.2	7.0	8.0	8.7	7.6	5.4	3.6	1.7	0.9	53.7
Friant	1.2	1.5	3.1	4.7	6.4	7.7	8.5	7.3	5.3	3.4	1.4	0.7	51.3
Kerman	0.9	1.5	3.2	4.8	6.6	7.7	8.4	7.2	5.3	3.4	1.4	0.7	51.2
Kingsburg	1.0	1.5	3.4	4.8	6.6	7.7	8.4	7.2	5.3	3.4	1.4	0.7	51.6
Mendota	1.5	2.5	4.6	6.2	7.9	8.6	8.8	7.5	5.9	4.5	2.4	1.5	61.7
Orange Cove	1.2	1.9	3.5	4.7	7.4	8.5	8.9	7.9	5.9	3.7	1.8	1.2	56.7
Panoche	1.1	2.0	4.0	5.6	7.8	8.5	8.3	7.3	5.6	3.9	1.8	1.2	57.2
Parlier	1.0	1.9	3.6	5.2	6.8	7.6	8.1	7.0	5.1	3.4	1.7	0.9	52.0
Reedley	1.1	1.5	3.2	4.7	6.4	7.7	8.5	7.3	5.3	3.4	1.4	0.7	51.3
Westlands	0.9	1.7	3.8	6.3	8.0	8.6	8.6	7.8	5.9	4.3	2.1	1.1	58.8

Appendix A - Reference Evapotranspiration (ETo) Table*													
County and City	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual ETo**
GLENN													
Orland	1.1	1.8	3.4	5.0	6.4	7.5	7.9	6.7	5.3	3.9	1.8	1.4	52.1
Willows	1.2	1.7	2.9	4.7	6.1	7.2	8.5	7.3	5.3	3.6	1.7	1.0	51.3
HUMBOLDT													
Eureka	0.5	1.1	2.0	3.0	3.7	3.7	3.7	3.7	3.0	2.0	0.9	0.5	27.5
Ferndale	0.5	1.1	2.0	3.0	3.7	3.7	3.7	3.7	3.0	2.0	0.9	0.5	27.5
Garberville	0.6	1.2	2.2	3.1	4.5	5.0	5.5	4.9	3.8	2.4	1.0	0.7	34.9
Hoopa	0.5	1.1	2.1	3.0	4.4	5.4	6.1	5.1	3.8	2.4	0.9	0.7	35.6
IMPERIAL													
Brawley	2.8	3.8	5.9	8.0	10.4	11.5	11.7	10.0	8.4	6.2	3.5	2.1	84.2
Calipatria/Mulberry	2.4	3.2	5.1	6.8	8.6	9.2	9.2	8.6	7.0	5.2	3.1	2.3	70.7
El Centro	2.7	3.5	5.6	7.9	10.1	11.1	11.6	9.5	8.3	6.1	3.3	2.0	81.7
Holtville	2.8	3.8	5.9	7.9	10.4	11.6	12.0	10.0	8.6	6.2	3.5	2.1	84.7
Meloland	2.5	3.2	5.5	7.5	8.9	9.2	9.0	8.5	6.8	5.3	3.1	2.2	71.6
Palo Verde II	2.5	3.3	5.7	6.9	8.5	8.9	8.6	7.9	6.2	4.5	2.9	2.3	68.2
Seeley	2.7	3.5	5.9	7.7	9.7	10.1	9.3	8.3	6.9	5.5	3.4	2.2	75.4
Westmoreland	2.4	3.3	5.3	6.9	8.7	9.6	9.6	8.7	6.9	5.0	3.0	2.2	71.4
Yuma	2.5	3.4	5.3	6.9	8.7	9.6	9.6	8.7	6.9	5.0	3.0	2.2	71.6
INYO													
Bishop	1.7	2.7	4.8	6.7	8.2	10.9	7.4	9.6	7.4	4.8	2.5	1.6	68.3
Death Valley Jct	2.2	3.3	5.4	7.7	9.8	11.1	11.4	10.1	8.3	5.4	2.9	1.7	79.1
Independence	1.7	2.7	3.4	6.6	8.5	9.5	9.8	8.5	7.1	3.9	2.0	1.5	65.2
Lower Haiwee Res.	1.8	2.7	4.4	7.1	8.5	9.5	9.8	8.5	7.1	4.2	2.6	1.5	67.6
Oasis	2.7	2.8	5.9	8.0	10.4	11.7	11.6	10.0	8.4	6.2	3.4	2.1	83.1
KERN													
Arvin	1.2	1.8	3.5	4.7	6.6	7.4	8.1	7.3	5.3	3.4	1.7	1.0	51.9
Bakersfield	1.0	1.8	3.5	4.7	6.6	7.7	8.5	7.3	5.3	3.5	1.6	0.9	52.4
Bakersfield/Bonanza	1.2	2.2	3.7	5.7	7.4	8.2	8.7	7.8	5.7	4.0	2.1	1.2	57.9
Bakersfield/Greenlee	1.2	2.2	3.7	5.7	7.4	8.2	8.7	7.8	5.7	4.0	2.1	1.2	57.9
KERN													
Belridge	1.4	2.2	4.1	5.5	7.7	8.5	8.6	7.8	6.0	3.8	2.0	1.5	59.2
Blackwells Corner	1.4	2.1	3.8	5.4	7.0	7.8	8.5	7.7	5.8	3.9	1.9	1.2	56.6
Buttonwillow	1.0	1.8	3.2	4.7	6.6	7.7	8.5	7.3	5.4	3.4	1.5	0.9	52.0
China Lake	2.1	3.2	5.3	7.7	9.2	10.0	11.0	9.8	7.3	4.9	2.7	1.7	74.8
Delano	0.9	1.8	3.4	4.7	6.6	7.7	8.5	7.3	5.4	3.4	1.4	0.7	52.0
Famoso	1.3	1.9	3.5	4.8	6.7	7.6	8.0	7.3	5.5	3.5	1.7	1.3	53.1
Grapevine	1.3	1.8	3.1	4.4	5.6	6.8	7.6	6.8	5.9	3.4	1.9	1.0	49.5
Inyokern	2.0	3.1	4.9	7.3	8.5	9.7	11.0	9.4	7.1	5.1	2.6	1.7	72.4
Isabella Dam	1.2	1.4	2.8	4.4	5.8	7.3	7.9	7.0	5.0	3.2	1.7	0.9	48.4
Lamont	1.3	2.4	4.4	4.6	6.5	7.0	8.8	7.6	5.7	3.7	1.6	0.8	54.4
Lost Hills	1.6	2.2	3.7	5.1	6.8	7.8	8.7	7.8	5.7	4.0	2.1	1.6	57.1
McFarland/Kern	1.2	2.1	3.7	5.6	7.3	8.0	8.3	7.4	5.6	4.1	2.0	1.2	56.5
Shafter	1.0	1.7	3.4	5.0	6.6	7.7	8.3	7.3	5.4	3.4	1.5	0.9	52.1
Taft	1.3	1.8	3.1	4.3	6.2	7.3	8.5	7.3	5.4	3.4	1.7	1.0	51.2
Tehachapi	1.4	1.8	3.2	5.0	6.1	7.7	7.9	7.3	5.9	3.4	2.1	1.2	52.9
KINGS													
Caruthers	1.6	2.5	4.0	5.7	7.8	8.7	9.3	8.4	6.3	4.4	2.4	1.6	62.7
Corcoran	1.6	2.2	3.7	5.1	6.8	7.8	8.7	7.8	5.7	4.0	2.1	1.6	57.1
Hanford	0.9	1.5	3.4	5.0	6.6	7.7	8.3	7.2	5.4	3.4	1.4	0.7	51.5
Kettleman	1.1	2.0	4.0	6.0	7.5	8.5	9.1	8.2	6.1	4.5	2.2	1.1	60.2
Lemoore	0.9	1.5	3.4	5.0	6.6	7.7	8.3	7.3	5.4	3.4	1.4	0.7	51.7
Stratford	0.9	1.9	3.9	6.1	7.8	8.6	8.8	7.7	5.9	4.1	2.1	1.0	58.7

Appendix A - Reference Evapotranspiration (ETo) Table*													
County and City	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual ETo**
LAKE													
Lakeport	1.1	1.3	2.6	3.5	5.1	6.0	7.3	6.1	4.7	2.9	1.2	0.9	42.8
Lower Lake	1.2	1.4	2.7	4.5	5.3	6.3	7.4	6.4	5.0	3.1	1.3	0.9	45.4
LASSEN													
Buntingville	1.0	1.7	3.5	4.9	6.2	7.3	8.4	7.5	5.4	3.4	1.5	0.9	51.8
Ravendale	0.6	1.1	2.3	4.1	5.6	6.7	7.9	7.3	4.7	2.8	1.2	0.5	44.9
Susanville	0.7	1.0	2.2	4.1	5.6	6.5	7.8	7.0	4.6	2.8	1.2	0.5	44.0
LOS ANGELES													
Burbank	2.1	2.8	3.7	4.7	5.1	6.0	6.6	6.7	5.4	4.0	2.6	2.0	51.7
Claremont	2.0	2.3	3.4	4.6	5.0	6.0	7.0	7.0	5.3	4.0	2.7	2.1	51.3
El Dorado	1.7	2.2	3.6	4.8	5.1	5.7	5.9	5.9	4.4	3.2	2.2	1.7	46.3
Glendale	2.0	2.2	3.3	3.8	4.7	4.8	5.7	5.6	4.3	3.3	2.2	1.8	43.7
Glendora	2.0	2.5	3.6	4.9	5.4	6.1	7.3	6.8	5.7	4.2	2.6	2.0	53.1
Gorman	1.6	2.2	3.4	4.6	5.5	7.4	7.7	7.1	5.9	3.6	2.4	1.1	52.4
Hollywood Hills	2.1	2.2	3.8	5.4	6.0	6.5	6.7	6.4	5.2	3.7	2.8	2.1	52.8
Lancaster	2.1	3.0	4.6	5.9	8.5	9.7	11.0	9.8	7.3	4.6	2.8	1.7	71.1
Long Beach	1.8	2.1	3.3	3.9	4.5	4.3	5.3	4.7	3.7	2.8	1.8	1.5	39.7
Los Angeles	2.2	2.7	3.7	4.7	5.5	5.8	6.2	5.9	5.0	3.9	2.6	1.9	50.1
LOS ANGELES													
Monrovia	2.2	2.3	3.8	4.3	5.5	5.9	6.9	6.4	5.1	3.2	2.5	2.0	50.2
Palmdale	2.0	2.6	4.6	6.2	7.3	8.9	9.8	9.0	6.5	4.7	2.7	2.1	66.2
Pasadena	2.1	2.7	3.7	4.7	5.1	6.0	7.1	6.7	5.6	4.2	2.6	2.0	52.3
Pearblossom	1.7	2.4	3.7	4.7	7.3	7.7	9.9	7.9	6.4	4.0	2.6	1.6	59.9
Pomona	1.7	2.0	3.4	4.5	5.0	5.8	6.5	6.4	4.7	3.5	2.3	1.7	47.5
Redondo Beach	2.2	2.4	3.3	3.8	4.5	4.7	5.4	4.8	4.4	2.8	2.4	2.0	42.6
San Fernando	2.0	2.7	3.5	4.6	5.5	5.9	7.3	6.7	5.3	3.9	2.6	2.0	52.0
Santa Clarita	2.8	2.8	4.1	5.6	6.0	6.8	7.6	7.8	5.8	5.2	3.7	3.2	61.5
Santa Monica	1.8	2.1	3.3	4.5	4.7	5.0	5.4	5.4	3.9	3.4	2.4	2.2	44.2
MADERA													
Chowchilla	1.0	1.4	3.2	4.7	6.6	7.8	8.5	7.3	5.3	3.4	1.4	0.7	51.4
Madera	0.9	1.4	3.2	4.8	6.6	7.8	8.5	7.3	5.3	3.4	1.4	0.7	51.5
Raymond	1.2	1.5	3.0	4.6	6.1	7.6	8.4	7.3	5.2	3.4	1.4	0.7	50.5
MARIN													
Black Point	1.1	1.7	3.0	4.2	5.2	6.2	6.6	5.8	4.3	2.8	1.3	0.9	43.0
Novato	1.3	1.5	2.4	3.5	4.4	6.0	5.9	5.4	4.4	2.8	1.4	0.7	39.8
Point San Pedro	1.1	1.7	3.0	4.2	5.2	6.2	6.6	5.8	4.3	2.8	1.3	0.9	43.0
San Rafael	1.2	1.3	2.4	3.3	4.0	4.8	4.8	4.9	4.3	2.7	1.3	0.7	35.8
MARIPOSA													
Coulterville	1.1	1.5	2.8	4.4	5.9	7.3	8.1	7.0	5.3	3.4	1.4	0.7	48.8
Mariposa	1.1	1.5	2.8	4.4	5.9	7.4	8.2	7.1	5.0	3.4	1.4	0.7	49.0
Yosemite Village	0.7	1.0	2.3	3.7	5.1	6.5	7.1	6.1	4.4	2.9	1.1	0.6	41.4
MENDOCINO													
Fort Bragg	0.9	1.3	2.2	3.0	3.7	3.5	3.7	3.7	3.0	2.3	1.2	0.7	29.0
Hopland	1.1	1.3	2.6	3.4	5.0	5.9	6.5	5.7	4.5	2.8	1.3	0.7	40.9
Point Arena	1.0	1.3	2.3	3.0	3.7	3.9	3.7	3.7	3.0	2.3	1.2	0.7	29.6
Sanel Valley	1.0	1.6	3.0	4.6	6.0	7.0	8.0	7.0	5.2	3.4	1.4	0.9	49.1
Ukiah	1.0	1.3	2.6	3.3	5.0	5.8	6.7	5.9	4.5	2.8	1.3	0.7	40.9
MERCED													
Kesterson	0.9	1.7	3.4	5.5	7.3	8.2	8.6	7.4	5.5	3.8	1.8	0.9	55.1
Los Banos	1.0	1.5	3.2	4.7	6.1	7.4	8.2	7.0	5.3	3.4	1.4	0.7	50.0
Merced	1.0	1.5	3.2	4.7	6.6	7.9	8.5	7.2	5.3	3.4	1.4	0.7	51.5

Appendix A - Reference Evapotranspiration (ETo) Table*													
County and City	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual ETo**
MODOC													
Modoc/Alturas	0.9	1.4	2.8	3.7	5.1	6.2	7.5	6.6	4.6	2.8	1.2	0.7	43.2
MONO													
Bridgeport	0.7	0.9	2.2	3.8	5.5	6.6	7.4	6.7	4.7	2.7	1.2	0.5	43.0
MONTEREY													
Arroyo Seco	1.5	2.0	3.7	5.4	6.3	7.3	7.2	6.7	5.0	3.9	2.0	1.6	52.6
Castroville	1.4	1.7	3.0	4.2	4.6	4.8	4.0	3.8	3.0	2.6	1.6	1.4	36.2
Gonzales	1.3	1.7	3.4	4.7	5.4	6.3	6.3	5.9	4.4	3.4	1.9	1.3	45.7
MONTEREY													
Greenfield	1.8	2.2	3.4	4.8	5.6	6.3	6.5	6.2	4.8	3.7	2.4	1.8	49.5
King City	1.7	2.0	3.4	4.4	4.4	5.6	6.1	6.7	6.5	5.2	2.2	1.3	49.6
King City-Oasis Rd.	1.4	1.9	3.6	5.3	6.5	7.3	7.4	6.8	5.1	4.0	2.0	1.5	52.7
Long Valley	1.5	1.9	3.2	4.1	5.8	6.5	7.3	6.7	5.3	3.6	2.0	1.2	49.1
Monterey	1.7	1.8	2.7	3.5	4.0	4.1	4.3	4.2	3.5	2.8	1.9	1.5	36.0
Pajaro	1.8	2.2	3.7	4.8	5.3	5.7	5.6	5.3	4.3	3.4	2.4	1.8	46.1
Salinas	1.6	1.9	2.7	3.8	4.8	4.7	5.0	4.5	4.0	2.9	1.9	1.3	39.1
Salinas North	1.2	1.5	2.9	4.1	4.6	5.2	4.5	4.3	3.2	2.8	1.5	1.2	36.9
San Ardo	1.0	1.7	3.1	4.5	5.9	7.2	8.1	7.1	5.1	3.1	1.5	1.0	49.0
San Juan	1.8	2.1	3.4	4.6	5.3	5.7	5.5	4.9	3.8	3.2	2.2	1.9	44.2
Soledad	1.7	2.0	3.4	4.4	5.5	5.4	6.5	6.2	5.2	3.7	2.2	1.5	47.7
NAPA													
Angwin	1.8	1.9	3.2	4.7	5.8	7.3	8.1	7.1	5.5	4.5	2.9	2.1	54.9
Carneros	0.8	1.5	3.1	4.6	5.5	6.6	6.9	6.2	4.7	3.5	1.4	1.0	45.8
Oakville	1.0	1.5	2.9	4.7	5.8	6.9	7.2	6.4	4.9	3.5	1.6	1.2	47.7
St Helena	1.2	1.5	2.8	3.9	5.1	6.1	7.0	6.2	4.8	3.1	1.4	0.9	44.1
Yountville	1.3	1.7	2.8	3.9	5.1	6.0	7.1	6.1	4.8	3.1	1.5	0.9	44.3
NEVADA													
Grass Valley	1.1	1.5	2.6	4.0	5.7	7.1	7.9	7.1	5.3	3.2	1.5	0.9	48.0
Nevada City	1.1	1.5	2.6	3.9	5.8	6.9	7.9	7.0	5.3	3.2	1.4	0.9	47.4
ORANGE													
Irvine	2.2	2.5	3.7	4.7	5.2	5.9	6.3	6.2	4.6	3.7	2.6	2.3	49.6
Laguna Beach	2.2	2.7	3.4	3.8	4.6	4.6	4.9	4.9	4.4	3.4	2.4	2.0	43.2
Santa Ana	2.2	2.7	3.7	4.5	4.6	5.4	6.2	6.1	4.7	3.7	2.5	2.0	48.2
PLACER													
Auburn	1.2	1.7	2.8	4.4	6.1	7.4	8.3	7.3	5.4	3.4	1.6	1.0	50.6
Blue Canyon	0.7	1.1	2.1	3.4	4.8	6.0	7.2	6.1	4.6	2.9	0.9	0.6	40.5
Colfax	1.1	1.5	2.6	4.0	5.8	7.1	7.9	7.0	5.3	3.2	1.4	0.9	47.9
Roseville	1.1	1.7	3.1	4.7	6.2	7.7	8.5	7.3	5.6	3.7	1.7	1.0	52.2
Soda Springs	0.7	0.7	1.8	3.0	4.3	5.3	6.2	5.5	4.1	2.5	0.7	0.7	35.4
Tahoe City	0.7	0.7	1.7	3.0	4.3	5.4	6.1	5.6	4.1	2.4	0.8	0.6	35.5
Truckee	0.7	0.7	1.7	3.2	4.4	5.4	6.4	5.7	4.1	2.4	0.8	0.6	36.2
PLUMAS													
Portola	0.7	0.9	1.9	3.5	4.9	5.9	7.3	5.9	4.3	2.7	0.9	0.5	39.4
Quincy	0.7	0.9	2.2	3.5	4.9	5.9	7.3	5.9	4.4	2.8	1.2	0.5	40.2
RIVERSIDE													
Beaumont	2.0	2.3	3.4	4.4	6.1	7.1	7.6	7.9	6.0	3.9	2.6	1.7	55.0
Blythe	2.4	3.3	5.3	6.9	8.7	9.6	9.6	8.7	6.9	5.0	3.0	2.2	71.4
Cathedral City	1.6	2.2	3.7	5.1	6.8	7.8	8.7	7.8	5.7	4.0	2.1	1.6	57.1
Coachella	2.9	4.4	6.2	8.4	10.5	11.9	12.3	10.1	8.9	6.2	3.8	2.4	88.1

Appendix A - Reference Evapotranspiration (ETo) Table*													
County and City	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual ETo**
RIVERSIDE													
Desert Center	2.9	4.1	6.4	8.5	11.0	12.1	12.2	11.1	9.0	6.4	3.9	2.6	90.0
Elsinore	2.1	2.8	3.9	4.4	5.9	7.1	7.6	7.0	5.8	3.9	2.6	1.9	55.0
Indio	**3.1**	3.6	6.5	8.3	10.5	11.0	10.8	9.7	8.3	5.9	3.7	2.7	83.9
La Quinta	2.4	2.8	5.2	6.5	8.3	8.7	8.5	7.9	6.5	4.5	2.7	2.2	66.2
Mecca	2.6	3.3	5.7	7.2	8.6	9.0	8.8	8.2	6.8	5.0	3.2	2.4	70.8
Oasis	2.9	3.3	5.3	6.1	8.5	8.9	8.7	7.9	6.9	4.8	2.9	2.3	68.4
Palm Deser	2.5	3.4	5.3	6.9	8.7	9.6	9.6	8.7	6.9	5.0	3.0	2.2	71.6
Palm Springs	2.0	2.9	4.9	7.2	8.3	8.5	11.6	8.3	7.2	5.9	2.7	1.7	71.1
Rancho California	1.8	2.2	3.4	4.8	5.6	6.3	6.5	6.2	4.8	3.7	2.4	1.8	49.5
Rancho Mirage	2.4	3.3	5.3	6.9	8.7	9.6	9.6	8.7	6.9	5.0	3.0	2.2	71.4
Ripley	2.7	3.3	5.6	7.2	8.7	8.7	8.4	7.6	6.2	4.6	2.8	2.2	67.8
Salton Sea North	2.5	3.3	5.5	7.2	8.8	9.3	9.2	8.5	6.8	5.2	3.1	2.3	71.7
Temecula East II	2.3	2.4	4.1	4.9	6.4	7.0	7.8	7.4	5.7	4.1	2.6	2.2	56.7
Thermal	2.4	3.3	5.5	7.6	9.1	9.6	9.3	8.6	7.1	5.2	3.1	2.1	72.8
Riverside UC	2.5	2.9	4.2	5.3	5.9	6.6	7.2	6.9	5.4	4.1	2.9	2.6	56.4
Winchester	2.3	2.4	4.1	4.9	6.4	6.9	7.7	7.5	6.0	3.9	2.6	2.1	56.8
SACRAMENTO													
Fair Oaks	1.0	1.6	3.4	4.1	6.5	7.5	8.1	7.1	5.2	3.4	1.5	1.0	50.5
Sacramento	1.0	1.8	3.2	4.7	6.4	7.7	8.4	7.2	5.4	3.7	1.7	0.9	51.9
Twitchell Island	1.2	1.8	3.9	5.3	7.4	8.8	9.1	7.8	5.9	3.8	1.7	1.2	57.9
SAN BENITO													
Hollister	1.5	1.8	3.1	4.3	5.5	5.7	6.4	5.9	5.0	3.5	1.7	1.1	45.1
San Benito	1.2	1.6	3.1	4.6	5.6	6.4	6.9	6.5	4.8	3.7	1.7	1.2	47.2
San Juan Valley	1.4	1.8	3.4	4.5	6.0	6.7	7.1	6.4	5.0	3.5	1.8	1.4	49.1
SAN BERNARDINO													
Baker	2.7	3.9	6.1	8.3	10.4	11.8	12.2	11.0	8.9	6.1	3.3	2.1	86.6
Barstow NE	2.2	2.9	5.3	6.9	9.0	10.1	9.9	8.9	6.8	4.8	2.7	2.1	71.7
Big Bear Lake	1.8	2.6	4.6	6.0	7.0	7.6	8.1	7.4	5.4	4.1	2.4	1.8	58.6
Chino	2.1	2.9	3.9	4.5	5.7	6.5	7.3	7.1	5.9	4.2	2.6	2.0	54.6
Crestline	1.5	1.9	3.3	4.4	5.5	6.6	7.8	7.1	5.4	3.5	2.2	1.6	50.8
Lake Arrowhead	1.8	2.6	4.6	6.0	7.0	7.6	8.1	7.4	5.4	4.1	2.4	1.8	58.6
Lucerne Valley	2.2	2.9	5.1	6.5	9.1	11.0	11.4	9.9	7.4	5.0	3.0	1.8	75.3
Needles	3.2	4.2	6.6	8.9	11.0	12.4	12.8	11.0	8.9	6.6	4.0	2.7	92.1
Newberry Springs	2.1	2.9	5.3	8.4	9.8	10.9	11.1	9.9	7.6	5.2	3.1	2.0	78.2
San Bernardino	2.0	2.7	3.8	4.6	5.7	6.9	7.9	7.4	5.9	4.2	2.6	2.0	55.6
Twentynine Palms	2.6	3.6	5.9	7.9	10.1	11.2	11.2	10.3	8.6	5.9	3.4	2.2	82.9
Victorville	2.0	2.6	4.6	6.2	7.3	8.9	9.8	9.0	6.5	4.7	2.7	2.1	66.2
SAN DIEGO													
Chula Vista	2.2	2.7	3.4	3.8	4.9	4.7	5.5	4.9	4.5	3.4	2.4	2.0	44.2
Escondido SPV	2.4	2.6	3.9	4.7	5.9	6.5	7.1	6.7	5.3	3.9	2.8	2.3	54.2
SAN DIEGO													
Miramar	2.3	2.5	3.7	4.1	5.1	5.4	6.1	5.8	4.5	3.3	2.4	2.1	47.1
Oceanside	2.2	2.7	3.4	3.7	4.9	4.6	4.6	5.1	4.1	3.3	2.4	2.0	42.9
Otay Lake	2.3	2.7	3.9	4.6	5.6	5.9	6.2	6.1	4.8	3.7	2.6	2.2	50.4
Pine Valley	1.5	2.4	3.8	5.1	6.0	7.0	7.8	7.3	6.0	4.0	2.2	1.7	54.8
Ramona	2.1	2.1	3.4	4.6	5.2	6.3	6.7	6.8	5.3	4.1	2.8	2.1	51.6
San Diego	2.1	2.4	3.4	4.6	5.1	5.3	5.7	5.6	4.3	3.6	2.4	2.0	46.5
Santee	2.1	2.7	3.7	4.5	5.5	6.1	6.6	6.2	5.4	3.8	2.6	2.0	51.1
Torrey Pines	2.2	2.3	3.4	3.9	4.0	4.1	4.6	4.7	3.8	2.8	2.0	2.0	39.8
Warner Springs	1.6	2.7	3.7	4.7	5.7	7.6	8.3	7.7	6.3	4.0	2.5	1.3	56.0

Appendix A - Reference Evapotranspiration (ETo) Table*													
County and City	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual ETo**
SAN FRANCISCO													
San Francisco	1.5	1.3	2.4	3.0	3.7	4.6	4.9	4.8	4.1	2.8	1.3	0.7	35.1
SAN JOAQUIN													
Farmington	1.5	1.5	2.9	4.7	6.2	7.6	8.1	6.8	5.3	3.3	1.4	0.7	50.0
Lodi West	1.0	1.6	3.3	4.3	6.3	6.9	7.3	6.4	4.5	3.0	1.4	0.8	46.7
Manteca	0.9	1.7	3.4	5.0	6.5	7.5	8.0	7.1	5.2	3.3	1.6	0.9	51.2
Stockton	0.8	1.5	2.9	4.7	6.2	7.4	8.1	6.8	5.3	3.2	1.4	0.6	49.1
Tracy	1.0	1.5	2.9	4.5	6.1	7.3	7.9	6.7	5.3	3.2	1.3	0.7	48.5
SAN LUIS OBISPO													
Arroyo Grande	2.0	2.2	3.2	3.8	4.3	4.7	4.3	4.6	3.8	3.2	2.4	1.7	40.0
Atascadero	1.2	1.5	2.8	3.9	4.5	6.0	6.7	6.2	5.0	3.2	1.7	1.0	43.7
Morro Bay	2.0	2.2	3.1	3.5	4.3	4.5	4.6	4.6	3.8	3.5	2.1	1.7	39.9
Nipomo	2.2	2.5	3.8	5.1	5.7	6.2	6.4	6.1	4.9	4.1	2.9	2.3	52.1
Paso Robles	1.6	2.0	3.2	4.3	5.5	6.3	7.3	6.7	5.1	3.7	2.1	1.4	49.0
San Luis Obispo	2.0	2.2	3.2	4.1	4.9	5.3	4.6	5.5	4.4	3.5	2.4	1.7	43.8
San Miguel	1.6	2.0	3.2	4.3	5.0	6.4	7.4	6.8	5.1	3.7	2.1	1.4	49.0
San Simeon	2.0	2.0	2.9	3.5	4.2	4.4	4.6	4.3	3.5	3.1	2.0	1.7	38.1
SAN MATEO													
Hal Moon Bay	1.5	1.7	2.4	3.0	3.9	4.3	4.3	4.2	3.5	2.8	1.3	1.0	33.7
Redwood City	1.5	1.8	2.9	3.8	5.2	5.3	6.2	5.6	4.8	3.1	1.7	1.0	42.8
Woodside	1.8	2.2	3.4	4.8	5.6	6.3	6.5	6.2	4.8	3.7	2.4	1.8	49.5
SANTA BARBARA													
Betteravia	2.1	2.6	4.0	5.2	6.0	5.9	5.8	5.4	4.1	3.3	2.7	2.1	49.1
Carpenteria	2.0	2.4	3.2	3.9	4.8	5.2	5.5	5.7	4.5	3.4	2.4	2.0	44.9
Cuyama	2.1	2.4	3.8	5.4	6.9	7.9	8.5	7.7	5.9	4.5	2.6	2.0	59.7
Goleta	2.1	2.5	3.9	5.1	5.7	5.7	5.4	5.4	4.2	3.2	2.8	2.2	48.1
Goleta Foothills	2.3	2.6	3.7	5.4	5.3	5.6	5.5	5.7	4.5	3.9	2.8	2.3	49.6
Guadalupe	2.0	2.2	3.2	3.7	4.9	4.6	4.5	4.6	4.1	3.3	2.4	1.7	41.1
Lompoc	2.0	2.2	3.2	3.7	4.8	4.6	4.9	4.8	3.9	3.2	2.4	1.7	41.1
Los Alamos	1.8	2.0	3.2	4.1	4.9	5.3	5.7	5.5	4.4	3.7	2.4	1.6	44.6
Santa Barbara	2.0	2.5	3.2	3.8	4.6	5.1	5.5	4.5	3.4	2.4	1.8	1.8	40.6
SANTA BARBARA													
Santa Maria	1.8	2.3	3.7	5.1	5.7	5.8	5.6	5.3	4.2	3.5	2.4	1.9	47.4
Santa Ynez	1.7	2.2	3.5	5.0	5.8	6.2	6.4	6.0	4.5	3.6	2.2	1.7	48.7
Sisquoc	2.1	2.5	3.8	4.1	6.1	6.3	6.4	5.8	4.7	3.4	2.3	1.8	49.2
Solvang	2.0	2.0	3.3	4.3	5.0	5.6	6.1	5.6	4.4	3.7	2.2	1.6	45.6
SANTA CLARA													
Gilroy	1.3	1.8	3.1	4.1	5.3	5.6	6.1	5.5	4.7	3.4	1.7	1.1	43.6
Los Gatos	1.5	1.8	2.8	3.9	5.0	5.6	6.2	5.5	4.7	3.2	1.7	1.1	42.9
Morgan Hill	1.5	1.8	3.4	4.2	6.3	7.0	7.1	6.0	5.1	3.7	1.9	1.4	49.5
Palo Alto	1.5	1.8	2.8	3.8	5.2	5.3	6.2	5.6	5.0	3.2	1.7	1.0	43.0
San Jose	1.5	1.8	3.1	4.1	5.5	5.8	6.5	5.9	5.2	3.3	1.8	1.0	45.3
SANTA CRUZ													
De Laveaga	1.4	1.9	3.3	4.7	4.9	5.3	5.0	4.8	3.6	3.0	1.6	1.3	40.8
Green Valley Rd	1.2	1.8	3.2	4.5	4.6	5.4	5.2	5.0	3.7	3.1	1.6	1.3	40.6
Santa Cruz	1.5	1.8	2.6	3.5	4.3	4.4	4.8	4.4	3.8	2.8	1.7	1.2	36.6
Watsonville	1.5	1.8	2.7	3.7	4.6	4.5	4.9	4.2	4.0	2.9	1.8	1.2	37.7
Webb	1.8	2.2	3.7	4.8	5.3	5.7	5.6	5.3	4.3	3.4	2.4	1.8	46.2

Appendix A - Reference Evapotranspiration (ETo) Table*													
County and City	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual ETo**
SHASTA													
Burney	0.7	1.0	2.1	3.5	4.9	5.9	7.4	6.4	4.4	2.9	0.9	0.6	40.9
Fall River Mills	0.6	1.0	2.1	3.7	5.0	6.1	7.8	6.7	4.6	2.8	0.9	0.5	41.8
Glenburn	0.6	1.0	2.1	3.7	5.0	6.3	7.8	6.7	4.7	2.8	0.9	0.6	42.1
McArthur	0.7	1.4	2.9	4.2	5.6	6.9	8.2	7.2	5.0	3.0	1.1	0.6	46.8
Redding	1.2	1.4	2.6	4.1	5.6	7.1	8.5	7.3	5.3	3.2	1.4	0.9	48.8
SIERRA													
Downieville	0.7	1.0	2.3	3.5	5.0	6.0	7.4	6.2	4.7	2.8	0.9	0.6	41.3
Sierraville	0.7	1.1	2.2	3.2	4.5	5.9	7.3	6.4	4.3	2.6	0.9	0.5	39.6
SISKIYOU													
Happy Camp	0.5	0.9	2.0	3.0	4.3	5.2	6.1	5.3	4.1	2.4	0.9	0.5	35.1
MacDoel	1.0	1.7	3.1	4.5	5.9	7.2	8.1	7.1	5.1	3.1	1.5	1.0	49.0
Mt Shasta	0.5	0.9	2.0	3.0	4.5	5.3	6.7	5.7	4.0	2.2	0.7	0.5	36.0
Tule lake FS	0.7	1.3	2.7	4.0	5.4	6.3	7.1	6.4	4.7	2.8	1.0	0.6	42.9
Weed	0.5	0.9	2.0	2.5	4.5	5.3	6.7	5.5	3.7	2.0	0.9	0.5	34.9
Yreka	0.6	0.9	2.1	3.0	4.9	5.8	7.3	6.5	4.3	2.5	0.9	0.5	39.2
SOLANO													
Dixon	0.7	1.4	3.2	5.2	6.3	7.6	8.2	7.2	5.5	4.3	1.6	1.1	52.1
Fairfield	1.1	1.7	2.8	4.0	5.5	6.1	7.8	6.0	4.8	3.1	1.4	0.9	45.2
Hastings Tract	1.6	2.2	3.7	5.1	6.8	7.8	8.7	7.8	5.7	4.0	2.1	1.6	57.1
Putah Creek	1.0	1.6	3.2	4.9	6.1	7.3	7.9	7.0	5.3	3.8	1.8	1.2	51.0
Rio Vista	0.9	1.7	2.8	4.4	5.9	6.7	7.9	6.5	5.1	3.2	1.3	0.7	47.0
Suisun Valley	0.6	1.3	3.0	4.7	5.8	7.0	7.7	6.8	5.3	3.8	1.4	0.9	48.3
Winters	0.9	1.7	3.3	5.0	6.4	7.5	7.9	7.0	5.2	3.5	1.6	1.0	51.0
SONOMA													
Bennett Valley	1.1	1.7	3.2	4.1	5.5	6.5	6.6	5.7	4.5	3.1	1.5	0.9	44.4
Cloverdale	1.1	1.4	2.6	3.4	5.0	5.9	6.2	5.6	4.5	2.8	1.4	0.7	40.7
Fort Ross	1.2	1.4	2.2	3.0	3.7	4.5	4.2	4.3	3.4	2.4	1.2	0.5	31.9
Healdsburg	1.2	1.5	2.4	3.5	5.0	5.9	6.1	5.6	4.5	2.8	1.4	0.7	40.8
Lincoln	1.2	1.7	2.8	4.7	6.1	7.4	8.4	7.3	5.4	3.7	1.9	1.2	51.9
Petaluma	1.2	1.5	2.8	3.7	4.6	5.6	4.6	5.7	4.5	2.9	1.4	0.9	39.6
Santa Rosa	1.2	1.7	2.8	3.7	5.0	6.0	6.1	5.9	4.5	2.9	1.5	0.7	42.0
Valley of the Moon	1.0	1.6	3.0	4.5	5.6	6.6	7.1	6.3	4.7	3.3	1.5	1.0	46.1
Windsor	0.9	1.6	3.0	4.5	5.5	6.5	6.5	5.9	4.4	3.2	1.4	1.0	44.2
Denair	1.0	1.9	3.6	4.7	7.0	7.9	8.0	6.1	5.3	3.4	1.5	1.0	51.4
La Grange	1.2	1.5	3.1	4.7	6.2	7.7	8.5	7.3	5.3	3.4	1.4	0.7	51.2
Modesto	0.9	1.4	3.2	4.7	6.4	7.7	8.1	6.8	5.0	3.4	1.4	0.7	49.7
Newman	1.0	1.5	3.2	4.6	6.2	7.4	8.1	6.7	5.0	3.4	1.4	0.7	49.3
STANISLAUS													
Oakdale	1.2	1.5	3.2	4.7	6.2	7.7	8.1	7.1	5.1	3.4	1.4	0.7	50.3
Patterson	1.3	2.1	4.2	5.4	7.9	8.6	8.2	6.6	5.8	4.0	1.9	1.3	57.3
Turlock	0.9	1.5	3.2	4.7	6.5	7.7	8.2	7.0	5.1	3.4	1.4	0.7	50.2
SUTTER													
Nicolaus	0.9	1.6	3.2	4.9	6.3	7.5	8.0	6.9	5.2	3.4	1.5	0.9	50.2
Yuba City	1.3	2.1	2.8	4.4	5.7	7.2	7.1	6.1	4.7	3.2	1.2	0.9	46.7
TEHAMA													
Corning	1.2	1.8	2.9	4.5	6.1	7.3	8.1	7.2	5.3	3.7	1.7	1.1	50.7
Gerber	1.0	1.8	3.5	5.0	6.6	7.9	8.7	7.4	5.8	4.1	1.8	1.1	54.7
Gerber Dryland	0.9	1.6	3.2	4.7	6.7	8.4	9.0	7.9	6.0	4.2	2.0	1.0	55.5
Red Bluff	1.2	1.8	2.9	4.4	5.9	7.4	8.5	7.3	5.4	3.5	1.7	1.0	51.1

Appendix A - Reference Evapotranspiration (ETo) Table*													
County and City	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual ETo**
TRINITY													
Hay Fork	0.5	1.1	2.3	3.5	4.9	5.9	7.0	6.0	4.5	2.8	0.9	0.7	40.1
Weaverville	0.6	1.1	2.2	3.3	4.9	5.9	7.3	6.0	4.4	2.7	0.9	0.7	40.0
TULARE													
Alpaugh	0.9	1.7	3.4	4.8	6.6	7.7	8.2	7.3	5.4	3.4	1.4	0.7	51.6
Badger	1.0	1.3	2.7	4.1	6.0	7.3	7.7	7.0	4.8	3.3	1.4	0.7	47.3
Delano	1.1	1.9	4.0	4.9	7.2	7.9	8.1	7.3	5.4	3.2	1.5	1.2	53.6
Dinuba	1.1	1.5	3.2	4.7	6.2	7.7	8.5	7.3	5.3	3.4	1.4	0.7	51.2
Lindcove	0.9	1.6	3.0	4.8	6.5	7.6	8.1	7.2	5.2	3.4	1.6	0.9	50.6
Porterville	1.2	1.8	3.4	4.7	6.6	7.7	8.5	7.3	5.3	3.4	1.4	0.7	52.1
Visalia	0.9	1.7	3.3	5.1	6.8	7.7	7.9	6.9	4.9	3.2	1.5	0.8	50.7
TUOLUMNE													
Groveland	1.1	1.5	2.8	4.1	5.7	7.2	7.9	6.6	5.1	3.3	1.4	0.7	47.5
Sonora	1.1	1.5	2.8	4.1	5.8	7.2	7.9	6.7	5.1	3.2	1.4	0.7	47.6
VENTURA													
Camarillo	2.2	2.5	3.7	4.3	5.0	5.2	5.9	5.4	4.2	3.0	2.5	2.1	46.1
Oxnard	2.2	2.5	3.2	3.7	4.4	4.6	5.4	4.8	4.0	3.3	2.4	2.0	42.3
Piru	2.8	2.8	4.1	5.6	6.0	6.8	7.6	7.8	5.8	5.2	3.7	3.2	61.5
Port Hueneme	2.0	2.3	3.3	4.6	4.9	4.9	4.9	5.0	3.7	3.2	2.5	2.2	43.5
Thousand Oaks	2.2	2.6	3.4	4.5	5.4	5.9	6.7	6.4	5.4	3.9	2.6	2.0	51.0
Ventura	2.2	2.6	3.2	3.8	4.6	4.7	5.5	4.9	4.1	3.4	2.5	2.0	43.5
YOLO													
Bryte	0.9	1.7	3.3	5.0	6.4	7.5	7.9	7.0	5.2	3.5	1.6	1.0	51.0
Davis	1.0	1.9	3.3	5.0	6.4	7.6	8.2	7.1	5.4	4.0	1.8	1.0	52.5
Esparto	1.0	1.7	3.4	5.5	6.9	8.1	8.5	7.5	5.8	4.2	2.0	1.2	55.8
Winters	1.7	1.7	2.9	4.4	5.8	7.1	7.9	6.7	5.3	3.3	1.6	1.0	49.4
Woodland	1.0	1.8	3.2	4.7	6.1	7.7	8.2	7.2	5.4	3.7	1.7	1.0	51.6
Zamora	1.1	1.9	3.5	5.2	6.4	7.4	7.8	7.0	5.5	4.0	1.9	1.2	52.8
YUBA													
Browns Valley	1.0	1.7	3.1	4.7	6.1	7.5	8.5	7.6	5.7	4.1	2.0	1.1	52.9
Brownsville	1.1	1.4	2.6	4.0	5.7	6.8	7.9	6.8	5.3	3.4	1.5	0.9	47.4

* The values in this table were derived from:
1) California Irrigation Management Information System (CIMIS);
2) Reference EvapoTranspiration Zones Map, UC Dept. of Land, Air & Water Resources and California Dept of Water Resources 1999; and
3) Reference Evapotranspiration for California, University of California, Department of Agriculture and Natural Resources (1987) Bulletin 1922 4) Determining Daily Reference Evapotranspiration, Cooperative Extension UC Division of Agriculture and Natural Resources (1987), Publication Leaflet 21426

Appendix B – Sample Water Efficient Landscape Worksheet.

WATER EFFICIENT LANDSCAPE WORKSHEET

This worksheet is filled out by the project applicant and it is a required element of the Landscape Documentation Package.
Please complete all sections (A and B) of the worksheet.

SECTION A. HYDROZONE INFORMATION TABLE

Please complete the hydrozone table(s) for each hydrozone. Use as many tables as necessary to provide the square footage of landscape area per hydrozone.

Hydrozone*	Zone or Valve	Irrigation Method**	Area (Sq. Ft.)	% of Landscape Area
	Total			**100%**

**** Hydrozone***
HW = High Water Use Plants
MW = Moderate Water Use Plants
LW = Low Water Use Plants

*****Irrigation Method***
MS = Micro-spray
S = Spray
R = Rotor
B= Bubbler
D= Drip
O = Other

SECTION B. WATER BUDGET CALCULATIONS

Section B1. Maximum Applied Water Allowance (MAWA)

The project's Maximum Applied Water Allowance shall be calculated using this equation:

MAWA = (ETo) (0.62) [(0.7 x LA) + (0.3 x SLA)]

where:

MAWA = Maximum Applied Water Allowance (gallons per year)
ETo = Reference Evapotranspiration from Appendix A (inches per year)
0.7 = ET Adjustment Factor (ETAF)
LA = Landscaped Area includes Special Landscape Area (square feet)
0.62 = Conversion factor (to gallons per square foot)
SLA = Portion of the landscape area identified as Special Landscape Area (square feet)
0.3 = the additional ET Adjustment Factor for Special Landscape Area (1.0 - 0.7 = 0.3)

Maximum Applied Water Allowance = _____gallons per year

Show calculations.

Effective Precipitation (Eppt)

If considering Effective Precipitation, use 25% of annual precipitation. Use the following equation to calculate Maximum Applied Water Allowance:

MAWA= (ETo – Eppt) (0.62) [(0.7 x LA) + (0.3 x SLA)]

Maximum Applied Water Allowance = _____gallons per year

Show calculations.

Section B2. Estimated Total Water Use (ETWU)

The project's Estimated Total Water Use is calculated using the following formula:

$$ETWU = (ETo)(0.62)\left(\frac{PF\,x\,HA}{IE} + SLA\right)$$

where:

ETWU = Estimated total water use per year (gallons per year)
ETo = Reference Evapotranspiration (inches per year)
PF = Plant Factor from WUCOLS (see Definitions)
HA = Hydrozone Area [high, medium, and low water use areas] (square feet)
SLA = Special Landscape Area (square feet)
0.62 = Conversion Factor (to gallons per square foot)
IE = Irrigation Efficiency (minimum 0.71)

Hydrozone Table for Calculating ETWU

Please complete the hydrozone table(s). Use as many tables as necessary.

Hydrozone	Plant Water Use Type(s)	Plant Factor (PF)	Area (HA) (square feet)	PF x HA (square feet)
			Sum	
	SLA			

Estimated Total Water Use = **_____gallons**

Show calculations.

Appendix C – Sample Certificate of Completion.

CERTIFICATE OF COMPLETION

This certificate is filled out by the project applicant upon completion of the landscape project.

PART 1. PROJECT INFORMATION SHEET

Date		
Project Name		
Name of Project Applicant	Telephone No.	
	Fax No.	
Title	Email Address	
Company	Street Address	
City	State	Zip Code

Project Address and Location:

Street Address		Parcel, tract or lot number, if available.
City		Latitude/Longitude (optional)
State	Zip Code	

Property Owner or his/her designee:

Name	Telephone No.	
	Fax No.	
Title	Email Address	
Company	Street Address	
City	State	Zip Code

Property Owner

"I/we certify that I/we have received copies of all the documents within the Landscape Documentation Package and the Certificate of Completion and that it is our responsibility to see that the project is maintained in accordance with the Landscape and Irrigation Maintenance Schedule."

_____

Property Owner Signature Date

Please answer the questions below:

1. Date the Landscape Documentation Package was submitted to the local agency_____
2. Date the Landscape Documentation Package was approved by the local agency_____
3. Date that a copy of the Water Efficient Landscape Worksheet (including the Water Budget Calculation) was submitted to the local water purveyor_____

PART 2. CERTIFICATION OF INSTALLATION ACCORDING TO THE LANDSCAPE DOCUMENTATION PACKAGE

"I/we certify that based upon periodic site observations, the work has been substantially completed in accordance with the ordinance and that the landscape planting and irrigation installation conform with the criteria and specifications of the approved Landscape Documentation Package."

Signature*	Date	
Name (print)	Telephone No.	
	Fax No.	
Title	Email Address	
License No. or Certification No.		
Company	Street Address	
City	State	Zip Code

*Signer of the landscape design plan, signer of the irrigation plan, or a licensed landscape contractor.

PART 3. IRRIGATION SCHEDULING

Attach parameters for setting the irrigation schedule on controller per ordinance Section 492.10.

PART 4. SCHEDULE OF LANDSCAPE AND IRRIGATION MAINTENANCE

Attach schedule of Landscape and Irrigation Maintenance per ordinance Section 492.11.

PART 5. LANDSCAPE IRRIGATION AUDIT REPORT

Attach Landscape Irrigation Audit Report per ordinance Section 492.12.

PART 6. SOIL MANAGEMENT REPORT

Attach soil analysis report, if not previously submitted with the Landscape Documentation Package per ordinance Section 492.5.

Attach documentation verifying implementation of recommendations from soil analysis report per ordinance Section 492.5.

ORDINANCE No.

AN ORDINANCE OF THE CITY OF ANTIOCH ESTABLISHING DROUGHT MANAGEMENT REGULATIONS AND WATER CONSERVATION GOALS, IMPOSING MEASURES TO CONTROL THE EXCESSIVE USE OF WATER

The City Council of the City of Antioch does ordain as follows:

SECTION 1. INTRODUCTION AND FINDINGS

The City of Antioch purchases both raw and treated water from the Contra Costa Water District (CCWD) which the City subsequently treats, distributes and sells to our residential, commercial and industrial customers. In addition, the City does have a pre-1914 "non-statutory" appropriative right that allows the City to take raw water directly from the San Joaquin River when the quality is determined to be suitable for municipal use. Even under the most favorable conditions, the City obtains the largest percentage of our raw water from CCWD.

CCWD is part of the federal water project, Central Valley Project (CVP), controlled by the United States Bureau of Reclamation. Because California is currently experiencing a third consecutive year of below normal rainfall and because federal reservoirs continue to be at below normal levels for this time of year, the Bureau of Reclamation has decided to reduce the amount of water available to users including CCWD, which is the largest municipal contractor of the CVP; additionally, the CVP is CCWD's primary source of untreated water.

Due to the Bureau of Reclamation decreasing CCWD's 2009 water allocations to 55% of historical use, CCWD has requested that their Wholesale Water Customers, such as the City of Antioch, establish Drought Management Regulations with a goal of achieving 15% reductions in water use based on their historical average consumption for the three year period 2005-2007. The focus on our Drought Management Regulations and 15% water reduction goal would be on reducing outside water use while minimizing impacts on jobs and the economy. In addition, CCWD has implemented an excessive use penalty for consumption that does not meet specific requirements outlined in their 15% reduction program.

On March 24, 2009, the City Council adopted Resolution No. 2009/24 declaring a water shortage emergency and directing the preparation of a drought emergency program ordinance. The focus of the Drought Management Regulations and 15% water reduction goals would be on reducing outside water use while minimizing impacts on jobs and the economy, as well as ensuring that the City has the resources to pay any excess use penalty imposed by CCWD.

The City intends to implement an extensive customer outreach and public education program to help ensure that customers are knowledgeable about the 15% water reduction

goals. The City will provide educational information, services and resources to assist customers in establishing and meeting their water reduction goal.

The City Council finds that the notice of the consideration of this ordinance was published pursuant to the requirements of Water Code §352.

SECTION 2. DECLARATION OF WATER SHORTAGE

In accordance with the California Water Code, the City Council recognizes the need to implement Drought Management Regulations. Council hereby finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the City and that there could be insufficient water for human consumption, sanitation and fire protection unless regulations and water conservation goals specified herein are implemented.

The regulations specified herein shall be effective from the effective date of this ordinance until such time as the City Council declares that the condition has ended.

SECTION 3. ALLOCATION OF WATER

In order to achieve the recommended 15% water conservation reduction goal, the City does hereby allocate as follows:

Customer Type	Allocation
Each single unit residence	15% below historical use
Apartments and condominiums	15% below historical use
Commercial	15% below historical use
Industrial	5% below historical use
Municipal/Institutional	15% below historical use
Landscaping	15% below historical use

Historical use shall be determined by averaging the corresponding month's actual use for the years 2005, 2006 and 2007. The water use year of 2008 will not be considered in the historical use calculation due to many customers already implementing water conservation measures. If there has not been water service at a location since 2005, the available corresponding monthly consumption history will be used. For residential customers who began water service in 2008 or later, the monthly consumption goal of 20 units will be used.

SECTION 4. NONESSENTIAL USE OF WATER PROHIBITED

A. No person shall use any water provided by the City for a nonessential purpose.
B. For the purposes of this Ordinance, each of the following is declared a nonessential use of water:
    1. Permitting water to flow onto a sidewalk, driveway or street, or escape down a gutter, ditch or other service drain;
    2. Outside watering that results in excessive flooding or runoff into a gutter, drain, walkway or street;
    3. Using City-furnished water for non-recirculating decorative fountains or filling of decorative lakes or ponds;
    4. Washing of paved or other hard surface areas, including sidewalks, walkways, driveways, patios and parking areas with City-furnished water;
    5. Failing to repair a controllable leak of water; and/or
    6. Using a hose without an automatic shutoff nozzle.

SECTION 5. EXCESSIVE USE OF WATER

All customers that have a monthly consumption of 21 units or more and who do not meet their established 15% water reduction goal, will be subject to an excess use charge of four times the quantity charge applied to consumption in excess of their reduction goal if excessive use charges are imposed upon the City by CCWD. All customers who increase their usage above their historical use will also be subject to an excess use charge of four times the quantity charge applied to consumption in excess of their historical use for the amount of the overage if excessive use charges are imposed upon the City by CCWD.

SECTION 6. RULES AND VARIANCES

The City Manager and/or his designee are hereby authorized to promulgate further rules and regulations further implementing the policies in this ordinance. The City Manager and/or his designee is also authorized to settle disputes regarding definitions of terms, applicability and other disputes or questions that may arise regarding the implementation of this ordinance. Requests for dispute resolution shall be made in writing to the City Manager and/or his designee.

The City Manager and or his designee are also authorized to provide procedures for, and to consider, grant, or deny requests for variances or exceptions to the provisions of this ordinance. For example, provisions shall be made for exceptions of this water reduction goal based upon medical needs.

Any appeals shall be made through the appeals process set by Chapter 4 of Title 1 of the Antioch Municipal Code.

SECTION 7. EFFECTIVE DATE

This ordinance shall take effect thirty (30) days after adoption. This ordinance, or summary, shall be published once in the East Contra Costa Times as required by state law.

* * * * * *

The foregoing ordinance was introduced at a regular meeting of the City Council of the City of Antioch held on May 12, 2009, and was adopted on May 26, 2009 by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

_____
James D. Davis, Mayor

Attest:

_____
L. Jolene Martin, City Clerk

APPENDIX I

CUWCC BMP Reporting and Water Conservation Materials

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BMP Data Report: FY11	Antioch
July 1, 2010 to June 30, 2011	
Residential	
Number of SF Residential Surveys conducted (assume Indoor and Landscape included)	17
Number of MF Residential INDOOR Surveys conducted	0
Number of SF Showerheads provided	34
Number of SF Aerators provided	35
Number of MF Showerheads provided	0
Number of MF Aerators provided	0
Number Res Washer Rebates (WF 4.5 or less)	713
Number of MF Washer Rebates (common laundry facility) (tier 3)	0
Number of SF HET Rebates	441
Number of MF HET Rebates	98
New Development Standards (# of new SF accounts)	0
New Development Standards (# of new MF dwelings)	0
Landscape	
Number of Mixed use CII or MF landscape audits conducted	0
Number of dedicated irrigation account landscape audits conducted	0
Number of Accounts with Water Budgets who received 2 or more Budget Site Reports during year	0
Annual Total Water Budget for accounts with Water Budgets	0
Annual Total Water Use for accounts with Water Budgets	0
Number of SF SMART Controller Rebates (# of stations)	12
Number of SF SMART Controller Rebates (# of controllers)	1
Number of CII/ MF SMART Controller Rebates (# of stations)	174
Number of CII/ MF SMART Controller Rebates (# of controllers)	6
Total Smart Timer REBATE DOLLARS Provided	$ 2,530.00
Number of CII/ MF Drip Retrofits (# OF STATIONS)	7
Number of CII/MF Sprinkler Rebates (# of HEADS)	0
Number of CII/ MF MP Rotator Rebates (# of nozzles)	775
Number of Large Rotors	0
Number of Sub-meters	1
Total Landscape REBATE DOLLARS provided for Irrigation upgrades other than Smart timers	$ 4,658.48
Number of SF Cash for Grass Rebates	0
Total SF Cash for Grass Rebate Dollars Provided in Year	0
Number of CII/ MF Cash for Grass Rebates	0
Total CII/ MF Cash for Grass Rebate Dollars Provided in Year	$ -
Fall Back Watering Campaign	0
Commercial	0
Number of CII audits completed	1
Number of CII Washer Rebates (Laundrymat)	0
Number of CII HET Rebates	9
Number of CII Urinal Rebates	0
Number of CII Pre-Rinse Spray Nozzles provided	0
Number of Water Brooms Rebated	0
Car Wash Recycling Rebate	0
Number of CII Conductivity Meters	0
Number of CII Restaurant Food Steamer Retrofits	0
Number of CII Restaurant Dishwasher Retrofits	0
New Development Standards (# of new CII accounts)	0

BMP Data Report: FY12	Antioch
July 1, 2011 to June 30, 2012	
Residential	
Number of SF Residential Surveys conducted (assume Indoor and Landscape included)	75
Number of MF Residential INDOOR Surveys conducted	0
Number of SF Showerheads provided	235
Number of SF Aerators provided	128
Number of MF Showerheads provided	0
Number of MF Aerators provided	0
Number Res Washer Rebates (WF 4.5 or less)	600
Number of MF Washer Rebates (common laundry facility) (tier 3)	0
Number of SF HET Rebates	229
Number of MF HET Rebates	160
New Development Standards (# of new SF accounts)	0
New Development Standards (# of new MF dwelings)	0
Landscape	
Number of Mixed use CII or MF landscape audits conducted	0
Number of dedicated irrigation account landscape audits conducted	0
Number of Accounts with Water Budgets who received 2 or more Budget Site Reports during year	0
Annual Total Water Budget for accounts with Water Budgets	0
Annual Total Water Use for accounts with Water Budgets	0
Number of SF SMART Controller Rebates (# of stations)	0
Number of SF SMART Controller Rebates (# of controllers)	0
Number of CII/ MF SMART Controller Rebates (# of stations)	0
Number of CII/ MF SMART Controller Rebates (# of controllers)	0
Total Smart Timer REBATE DOLLARS Provided	$ -
Number of CII/ MF Drip Retrofits (# OF STATIONS)	0
Number of CII/MF Sprinkler Rebates (# of HEADS)	0
Number of CII/ MF MP Rotator Rebates (# of nozzles)	0
Number of Large Rotors	0
Number of Sub-meters	0
Total Landscape REBATE DOLLARS provided for Irrigation upgrades other than Smart timers	$ -
Single Family: # of LRP Rebates	6
Single Family: LRP- Square Feet Converted	4354
Single Family: Total LRP Dollars provided	2040
CII: # of LRP Rebates	0
CII: LRP- Square Feet Converted	0
CII: Total LRP Dollars provided	$ -
Fall Back Watering Campaign	0
Commercial	0
Number of CII audits completed	0
Number of CII Washer Rebates (Laundrymat)	0
Number of CII HET Rebates	8
Number of CII Urinal Rebates	0
Number of CII Pre-Rinse Spray Nozzles provided	0
Number of Water Brooms Rebated	0
Car Wash Recycling Rebate	0
Number of CII Conductivity Meters	0
Number of CII Restaurant Food Steamer Retrofits	0
Number of CII Restaurant Dishwasher Retrofits	0
New Development Standards (# of new CII accounts)	0

BMP Data Report: F13	Antioch
July 1, 2012 to June 30, 2013	
Residential	
Number of SF Residential Surveys conducted (assume Indoor and Landscape included)	75
Number of MF Residential INDOOR Surveys conducted	2
Number of SF Showerheads provided	17
Number of SF Aerators provided	28
Number of MF Showerheads provided	0
Number of MF Aerators provided	0
Number Res Washer Rebates (WF 4.5 or less)	551
Number of MF Washer Rebates (common laundry facility) (tier 3)	0
Number of SF HET Rebates	223
Number of MF HET Rebates	6
New Development Standards (# of new SF accounts)	0
New Development Standards (# of new MF dwelings)	0
Landscape	
Number of Mixed use CII or MF landscape audits conducted	0
Number of dedicated irrigation account landscape audits conducted	1
Number of Accounts with Water Budgets who received 2 or more Budget Site Reports during year	0
Annual Total Water Budget for accounts with Water Budgets	0
Annual Total Water Use for accounts with Water Budgets	0
Number of SF SMART Controller Rebates (# of stations)	0
Number of SF SMART Controller Rebates (# of controllers)	0
Number of CII/ MF SMART Controller Rebates (# of stations)	0
Number of CII/ MF SMART Controller Rebates (# of controllers)	0
Total Smart Timer REBATE DOLLARS Provided	$ -
Number of CII/ MF Drip Retrofits (Square Feet)	0
Number of CII/MF Sprinkler Rebates (# of HEADS)	0
Number of CII/ MF MP Rotator Rebates (# of nozzles)	0
Number of Large Rotors	0
Number of Sub-meters	0
Total Landscape REBATE DOLLARS provided for Irrigation upgrades other than Smart timers	$ -
Single Family: # of LRP Rebates	12
Single Family: LRP- Square Feet Converted	9267
Single Family: Total LRP Dollars provided	4315
CII: # of LRP Rebates	0
CII: LRP- Square Feet Converted	0
CII: Total LRP Dollars provided	$ -
Fall Back Watering Campaign	0
Commercial	0
Number of CII audits completed	0
Number of CII Washer Rebates (Laundrymat)	0
Number of CII HET Rebates	0
Number of CII Urinal Rebates	0
Number of CII Pre-Rinse Spray Nozzles provided	0
Number of Water Brooms Rebated	0
Car Wash Recycling Rebate	0
Number of CII Conductivity Meters	0
Number of CII Restaurant Food Steamer Retrofits	0
Number of CII Restaurant Dishwasher Retrofits	0
New Development Standards (# of new CII accounts)	0

BMP Data Report: FY14	Antioch
July 1, 2013 to June 30, 2014	
Residential	
Number of SF Residential Surveys conducted (assume Indoor and Landscape included)	21
Number of MF Residential INDOOR Surveys conducted	0
Number of SF Showerheads provided	138
Number of SF Aerators provided	238
Number of MF Showerheads provided	0
Number of MF Aerators provided	0
Number Res Washer Rebates (WF 4.5 or less)	435
Number of MF Washer Rebates (common laundry facility) (tier 3)	0
Number of SF HET Rebates	340
Number of MF HET Rebates	7
New Development Standards (# of new SF accounts)	0
New Development Standards (# of new MF dwelings)	0
Landscape	
Number of Mixed use CII or MF landscape audits conducted	1
Number of dedicated irrigation account landscape audits conducted	1
Number of Accounts with Water Budgets who received 2 or more Budget Site Reports during year	0
Annual Total Water Budget for accounts with Water Budgets	0
Annual Total Water Use for accounts with Water Budgets	0
Number of SF SMART Controller Rebates (# of stations)	0
Number of SF SMART Controller Rebates (# of controllers)	0
Number of CII/ MF SMART Controller Rebates (# of stations)	89
Number of CII/ MF SMART Controller Rebates (# of controllers)	2
Total Smart Timer REBATE DOLLARS Provided	$ 1,780.00
Number of CII/ MF Drip Retrofits (Square Feet)	0
Number of CII/MF Sprinkler Rebates (# of HEADS)	0
Number of CII/ MF MP Rotator Rebates (# of nozzles)	0
Number of Large Rotors	0
Number of Sub-meters	0
Total Landscape REBATE DOLLARS provided for Irrigation upgrades other than Smart timers	$ -
Single Family: # of LRP Rebates	9
Single Family: LRP- Square Feet Converted	7050
Single Family: Total LRP Dollars provided	5313
CII: # of LRP Rebates	0
CII: LRP- Square Feet Converted	0
CII: Total LRP Dollars provided	$ -
Fall Back Watering Campaign	0
Commercial	0
Number of CII audits completed	3
Number of CII Washer Rebates (Laundrymat)	0
Number of CII HET Rebates	0
Number of CII Urinal Rebates	0
Number of CII Pre-Rinse Spray Nozzles provided	0
Number of Water Brooms Rebated	0
Car Wash Recycling Rebate	0
Number of CII Conductivity Meters	0
Number of CII Restaurant Food Steamer Retrofits	0
Number of CII Restaurant Dishwasher Retrofits	0
New Development Standards (# of new CII accounts)	0

BMP Data Report: FY15	Antioch
July 1, 2014 to June 30, 2015	
Residential	
Number of SF Residential Surveys conducted (assume Indoor and Landscape included)	28
Number of MF Residential INDOOR Surveys conducted	0
Number of SF Showerheads provided	212
Number of SF Aerators provided	176
Number of MF Showerheads provided	34
Number of MF Aerators provided	68
Number Res Washer Rebates (WF 4.5 or less)	348
Number of MF Washer Rebates (common laundry facility)	2
Number of SF HET Rebates	280
Number of MF HET Rebates	20
New Development Standards (# of new SF accounts)	0
New Development Standards (# of new MF dwelings)	0
Landscape	
Number of Mixed use CII or MF landscape audits conducted	0
Number of dedicated irrigation account landscape audits conducted	0
Number of Accounts with Water Budgets who received 2 or more Budget Site Reports during year	0
Annual Total Water Budget for accounts with Water Budgets	0
Annual Total Water Use for accounts with Water Budgets	0
Number of SF SMART Controller Rebates (# of stations)	0
Number of SF SMART Controller Rebates (# of controllers)	0
Number of CII/ MF SMART Controller Rebates (# of stations)	0
Number of CII/ MF SMART Controller Rebates (# of controllers)	0
Total Smart Timer REBATE DOLLARS Provided	$ -
Number of CII/ MF Drip Retrofits (Square Feet)	0
Number of CII/MF Sprinkler Rebates (# of HEADS)	0
Number of CII/ MF MP Rotator Rebates (# of nozzles)	0
Number of Large Rotors	0
Number of Sub-meters	0
Total Landscape REBATE DOLLARS provided for Irrigation upgrades other than Smart timers	$ -
Single Family: # of LRP Rebates	55
Single Family: LRP- Square Feet Converted	44962
Single Family: Total LRP Dollars provided	40698
CII: # of LRP Rebates	0
CII: LRP- Square Feet Converted	0
CII: Total LRP Dollars provided	$ -
Fall Back Watering Campaign	0
Commercial	0
Number of CII audits completed	1
Number of CII Washer Rebates (Laundrymat)	0
Number of CII HET Rebates	10
Number of CII Urinal Rebates	0
Number of CII Pre-Rinse Spray Nozzles provided	1
Number of Water Brooms Rebated	0
Car Wash Recycling Rebate	0
Number of CII Conductivity Meters	0
Number of CII Restaurant Food Steamer Retrofits	0
Number of CII Restaurant Dishwasher Retrofits	0
New Development Standards (# of new CII accounts)	0

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APPENDIX J

UWMP Adoption Resolution

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RESOLUTION NO. 2016/51
RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ANTIOCH ADOPTING AN URBAN WATER USE TARGET METHOD AS REQUIRED BY THE WATER CONSERVATION ACT OF 2009 (SB X7-7) AND THE 2015 URBAN WATER MANAGEMENT PLAN, AS REQUIRED BY THE URBAN WATER MANAGEMENT PLANNING ACT
(P.W. 340-12)

WHEREAS, California Water Code (CWC) Section 10620 Urban Water Management Planning requires all urban water suppliers to prepare and adopt an Urban Water Management Plan (UWMP) and update said plan at least once every five years; and

WHEREAS, an urban water supplier is defined by CWC Section 10617 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"; and,

WHEREAS, the City of Antioch provided 4,491 million gallons (13,782 acre-feet) of potable water for municipal purposes to 31,798 customers in 2015 and therefore meets the definition of urban water supplier; and,

WHEREAS, CWC Section 10608 Sustainable Water Use and Demand Reduction, also known as the Water Conservation Act of 2009 and Senate Bill SB X7-7, requires all urban water suppliers to develop a water use target and adopt a method for determining its water use target; and,

WHEREAS, the City of Antioch has identified the Department of Water Resources Water Use Target Method 3 for calculating 2015 (Interim) and 2020 (Final) per-capita water use targets as the preferred target method; and,

WHEREAS, the City of Antioch has prepared the required plan, allowed public review and held the appropriate public hearing.

NOW THEREFORE, BE IT RESOLVED by the City Council of the City of Antioch, that it does hereby adopt Department of Water Resources Water Use Target Method 3 and the 2015 Urban Water Management Plan and authorizes City staff to submit the 2015 Urban Water Management Plan to the Department of Water Resources.

* * * * * *

I DO HEREBY CERTIFY that the foregoing is a full, true and correct copy of a resolution duly and regularly adopted by the City Council of the City of Antioch at a regular meeting thereof held on the 24th day of May, 2016 by the following vote:

AYES: Council Members Wilson, Ogorchock, Tiscareno, Rocha and Mayor Harper

NOES: None

ABSENT: None

ARNE SIMONSEN
CITY CLERK OF THE CITY OF ANTIOCH

APPENDIX K

Regional Alliance Documentation

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File copy

CONTRA COSTA
WATER DISTRICT

1331 Concord Avenue
P.O. Box H2O
Concord, CA 94524
(925) 688-8000 FAX (925) 688-8122
www.ccwater.com

Directors
Joseph L. Campbell
President

Karl L. Wandry
Vice President

Bette Boatmun
Lisa M. Borba
John A. Burgh

Jerry Brown
General Manager

June 8, 2011

Mr. Peter Brostrom
Urban Water Use and Efficiency Branch
California Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236

Subject: 2010 Urban Water Management Plan – Regional Alliance

Dear Mr. Brostrom:

The purpose of this letter is to inform the California Department of Water Resources of the regional alliance Contra Costa Water District (CCWD) has formed with its wholesale municipal customers. The regional alliance includes the following members:

- Contra Costa Water District
- City of Antioch
- City of Martinez
- City of Pittsburg
- Diablo Water District
- Golden State Water Company (Bay Point)

Each member of the regional alliance has prepared an individual Urban Water Management Plan that includes individual baseline and water use target analyses required by the Water Conservation Bill of 2009 (SBX 7-7) as well as acknowledgement that the agency is participating in the CCWD regional alliance. The regional alliance analysis was prepared by CCWD and is included in Appendix H of CCWD's 2010 Urban Water Management Plan.

If you have any questions or concerns, please feel free to contact me at (925) 688-8310.

Sincerely,

Jeff Quimby

Jeff Quimby
Principal Engineer

KL:cmn

cc: Mr. Phil Harrington, City of Antioch
Mr. Alan Pellegrini, City of Martinez
Mr. Walter Pease, City of Pittsburg
Mr. Mike Yeraka, Diablo Water District
Mr. Ernie Gisler, Golden State Water Company

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WEST YOST ASSOCIATES

CITY OF ANTIOCH 1872 CALIFORNIA