FINAL REPORT | JUNE 2021

# 2020 Urban Water Management Plan

**PREPARED FOR**

THE CITY OF PLEASANTON

**PREPARED BY**

WEST YOST
Water. Engineered.

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# 2020 Urban Water Management Plan

**Prepared for**

## City of Pleasanton

**Project No. 680-60-20-04**

Project Manager: Elizabeth T. Drayer, PE — June 1, 2021 (Date)

QA/QC Review: Jim Connell, PE — June 1, 2021 (Date)

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## LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| 2019 DCR | Final 2019 State Water Project Delivery Capability Report |
| AB | Assembly Bill |
| ABAG | Association of Bay Area Governments |
| ACS | American Community Survey |
| Act | Urban Water Management Planning Act |
| ACWD | Alameda County Water District |
| AF | Acre-Feet |
| AFY | Acre-Feet of Water Annually |
| AMI | Advanced Metering Infrastructure |
| AWIA | America's Water Infrastructure Act |
| BARDP | Bay Area Regional Desalination Project |
| BARR | Bay Area Regional Reliability |
| BART | Bay Area Rapid Transit |
| BAWSCA | Bay Area Water Supply and Conservation Agency |
| CASGEM | California Statewide Groundwater Elevation Monitoring |
| CCWD | Contra Costa Water District |
| cfs | Cubic Feet Per Second |
| CII | Commercial, Industrial, and Institutional |
| CIMIS | California Irrigation Management Information System |

| | |
|---|---|
| CIP | Capital Improvement Program |
| City | City of Pleasanton |
| COA | Coordinated Operations Agreement |
| CPI | Consumer Price Index |
| Cr(VI) | Hexavalent Chromium |
| CVP | Central Valley Project |
| CWC | California Water Code |
| DBPs | Disinfectant Byproducts |
| DCP | Delta Conveyance Project |
| DERWA | DSRSD-EBMUD Recycled Water Authority |
| DMMs | Demand Management Measures |
| DOC | Dissolved Organic Carbon |
| DOF | Department of Finance |
| DRA | Drought Risk Assessment |
| DSRSD | Dublin San Ramon Services District |
| DWR | Department of Water Resources |
| DWR Guidebook | 2020 Urban Water Management Plans Guidebook for Urban Water Suppliers |
| EBDA | East Bay Dischargers Authority |
| EBMUD | East Bay Municipal Utility District |
| EIR | Environmental Impact Report |
| ESD | Environmental Services Division |
| ESS | Environmental Services Specialist |
| $ET_o$ | Evapotranspiration |
| FEMA | Federal Emergency Management Agency |
| GHG | Greenhouse Gas |
| GIS | Geographic Information System |
| GPCD | Gallons Per Capita Per Day |
| gpm | Gallons Per Minute |
| GPQ | Groundwater Pumping Quota |
| GSA | Groundwater Sustainability Agency |
| HCD | California State Department of Housing and Community Development |
| IPR | Indirect Potable Reuse |
| kWh | Kilowatt-hours |
| LAVWMA | Livermore Amador Valley Water Management Agency |
| LF | Linear Feet |
| LHMP | Local Hazard Mitigation Plan |
| LWRP | Livermore Water Reclamation Plant |
| M&I | Municipal and Industrial |
| MCL | Maximum Contaminant Level |

| | |
|---|---|
| MFUV | Microfiltration Filtration and Ultraviolet Disinfection Facilities |
| MG | Million Gallon |
| MGD | Million Gallons Per Day |
| MGDP | Mocho Groundwater Demineralization Plant |
| MMWD | Marin Municipal Water District |
| MTC | Metropolitan Transportation Commission |
| NAICS | North American Industry Classification System |
| NMP | Nutrient Management Plan |
| NOP | Notice of Preparation |
| PFAS | Polyfluoroalkyl Substances |
| PG&E | Pacific Gas and Electric |
| PMC | Pleasanton Municipal Code |
| RHNA | Regional Housing Needs Allocation |
| RRA | Risk and Resilience Assessment |
| RUWMP | Regional Urban Water Management Plan |
| RW Project | Recycled Water Project |
| RWQCB | Regional Water Quality Control Board |
| RWTF | Regional Wastewater Treatment Facility |
| SB | Senate Bill |
| SB X7-7 | Water Conservation Act of 2009 |
| SBA | South Bay Aqueduct |
| SCADA | Supervisory Control and Data Acquisition |
| SFPUC | San Francisco Public Utilities Commission |
| SFUV | Sand Filtration and Ultraviolet Disinfection Facilities |
| SGMA | Sustainable Groundwater Management Act |
| SMP | Salt Management Plan |
| SRVRWP | San Ramon Valley Recycled Water Program |
| SWP | State Water Project |
| SWRCB | State Water Resources Control Board |
| T&O | Taste and Odor |
| TAF | Thousand Acre-Feet |
| TDS | Total Dissolved Solids |
| TOC | Total Organic Carbon |
| TOD | Transit-Oriented Development |
| TRE | TRE Altamira |
| USGS | United States Geological Survey |
| UV | Ultraviolet Light |
| UWMP | Urban Water Management Plan |
| WSCP | Water Shortage Contingency Plan |

| | |
|---|---|
| WSE | Water Supply Evaluation |
| WTP | Water Treatment Plant |
| WUE | Water Use Efficiency |
| Zone 7 | Zone 7 Water Agency |

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# EXECUTIVE SUMMARY

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

The City of Pleasanton (City) is a water retailer (also referred to as a retail water agency), meaning it sells water directly to individual water users (e.g., residents and businesses). The City purchases most of its water supplies from Zone 7 Water Agency (Zone 7). Besides the City, Zone 7's retailers consist of the California Water Service (Cal Water), the City of Livermore (Livermore), and the Dublin San Ramon Services District (DSRSD). Because the City provides water to more than 3,000 users, it is required to prepare a UWMP.

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

## CALIFORNIA WATER CODE REQUIREMENTS

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

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

The 2012 to 2016 drought led to further revisions to the Act to improve water supply planning for long-term reliability and resilience to drought and climate change. These revisions were formalized in the 2018 Water Conservation Legislation and include:

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

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

Major components and findings of the City's 2020 UWMP are summarized below.

## CITY WATER SYSTEM

The City's water facilities produce, treat, store, and deliver drinking (i.e., potable) water to its customers, which include City residents and commercial customers, as well as approximately 250 customers in unincorporated Alameda County.

The City produces water by pumping it from City-owned wells (groundwater) and purchasing treated water from Zone 7. Groundwater is treated before it enters the distribution system. The City also owns and operates an extensive network of pipelines and pumping facilities to deliver drinking water to its customers.

Besides drinking water, the City delivers recycled water to a portion of customers within its service area, mainly for landscape irrigation. Recycled water is highly treated wastewater that can be used for non-potable purposes like landscape irrigation, toilet flushing, and cooling. The City owns and operates a separate storage and pipeline system for recycled water.

## WATER USE BY CITY CUSTOMERS

The City anticipates growth in the next 20 years, which would increase its demand for water. Thorough and accurate accounting of current and future water demands is critical for the City's planning efforts. To continue delivering safe and reliable drinking water, the City must know how much water its customers currently use and how much they expect to use in the future.

The City coordinated closely with Zone 7 to estimate water demands through the year 2045. This process involved reviewing the City's development and planning documents. The City's potable and recycled water demand is expected to increase approximately 23 and 47 percent (from 2020 levels), respectively, by 2045. Most of that growth is expected in the next ten years.

## CITY WATER SUPPLIES

The City's water supplies consist of purchases from Zone 7 (approximately 80 percent of supply in 2020) and groundwater pumped by the City (approximately 20 percent of supply in 2020). Of Zone 7's supplies, imported water from the State Water Project makes up approximately 80 percent, with the remainder coming from groundwater and local surface water.

The future reliability of Zone 7's imported water is a concern. Drought, sea level rise, and natural disasters threaten the Sacramento-San Joaquin Delta (Delta), a critical component of the delivery system bringing water to Zone 7. As a result, Zone 7 is participating in various projects that would provide alternate water supplies or protect the existing delivery system against threats. These projects include installing a pipeline system beneath the Delta, desalinating brackish water (water with high salt content), reusing highly treated wastewater, and participating in the construction of a new reservoir to store surplus water in wet years.

Based on Zone 7's efforts and the City's continued use of groundwater, the City's future water supplies are expected to keep pace with its water demands.

## CONSERVATION TARGET COMPLIANCE

In its 2015 UWMP, the City achieved its interim water use target and confirmed its 2020 water use target based on 2010 Census data. In 2020, the City achieved its 20 percent reduction target in accordance with SB X7-7. This achievement was the result of continued water conservation by its customers following the recent drought, in addition to the conversion of potable water use for irrigation to recycled water along the recently constructed recycled water distribution system.

## CITY WATER SERVICE RELIABILITY

The California Water Code asks agencies to evaluate their water service reliability by examining the impact of drought on their water supplies and comparing those reduced supplies to water demands. Specifically, agencies should calculate their water supplies during a single dry year and five consecutive dry years using historical records. For example, the City can estimate its groundwater supply during a single dry year by looking at how much it pumped during the driest year on record. If that historical "dry year" amount was reduced by 10 percent, then the City can conservatively assume a similar 10 percent reduction in groundwater supplies in a future dry year.

The City is well-positioned to withstand the effects of a single dry year and a five-year drought. The City's drought risk was specifically assessed between 2021 and 2025, assuming that the next five years are dry years. Based on Zone 7's ability to meet all its water demands during dry conditions, the City is expected to have enough water supplies to meet water demands for a five-year drought beginning in 2021. This remains true for five-year droughts beginning in 2025, 2030, 2035, 2040, and 2045.

## WATER SHORTAGE CONTINGENCY PLAN

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

## UWMP PREPARATION, REVIEW, AND ADOPTION

The City developed this 2020 UWMP in coordination with Zone 7 and the public. While preparing its UWMP, the City notified other stakeholders (e.g., Alameda County, Cal Water, Livermore, DSRSD) of its preparation, its availability for review, and the public hearing prior to adoption. The City encouraged community participation in the development of the 2020 UWMP using newspaper advertisements and web-based communication. These public notices included the time and place of the public hearing, as well as where the plan would be available for public inspection.

The public hearing provided an opportunity for the City's water users and the general public to become familiar with the 2020 UWMP and ask questions about the City's water supply, its continuing plans for providing a reliable, safe, high-quality water supply, and its plans to address potential water shortages. Following the public hearing, the City Council adopted the 2020 UWMP on June 1, 2021. A copy of the adopted UWMP was submitted to the Department of Water Resources and is available on the City's website (www.cityofpleasantonca.gov).

# CHAPTER 1
# Introduction

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

## 1.1 INTRODUCTION

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

## 1.2 IMPORTANCE AND EXTENT OF CITY'S WATER MANAGEMENT PLANNING EFFORTS

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

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

## 1.3 CHANGES FROM 2015 UWMP

The Act has been modified over the years in response to the State's water shortages, droughts, and other factors. A significant amendment was made in 2009, after the 2007 to 2009 drought, and as a result of the Governor's call for a statewide 20 percent reduction in urban water use by the year 2020. This was the Water Conservation Act of 2009, also known as Senate Bill Seven of the Senate's Seventh Extraordinary Session of 2009 (SB X7-7). This act required agencies to establish water use targets for 2015 and 2020 that would result in statewide water savings of 20 percent by 2020. The 2012 to 2016 drought led to further amendments to the CWC to improve water supply planning for long-term reliability and resilience to drought and climate change.

Summarized below are the major additions and changes to the CWC since the City's 2015 UWMP was prepared.

- **Five Consecutive Dry-Year Water Reliability Assessment** [CWC §10635(a)]. The Legislature modified the dry-year water reliability planning from a "multi-year" time period to a "drought lasting five consecutive water years" designation. This statutory change requires the urban water supplier to analyze the reliability of its water supplies to meet its water use over an extended drought period. This requirement is addressed in the water use assessment presented in Chapter 4; the water supply analysis presented in Chapter 6; and the water reliability determinations in Chapter 7 of this plan.
- **Drought Risk Assessment** [CWC §10635(b)]. The California Legislature created a new UWMP requirement for drought planning because of the significant duration of recent California droughts and the predictions about hydrological variability attributable to climate change. The Drought Risk Assessment (DRA) requires the urban water supplier to assess water supply reliability over a five-year period from 2021 to 2025. The assessment must examine water supplies, water uses, and the resulting water supply reliability under a reasonable prediction for five consecutive dry years. The DRA is discussed in Chapter 7 based on the water use information in Chapter 4; the water supply analysis in Chapter 6; and the water reliability determinations in Chapter 7 of this plan.
- **Seismic Risk** [CWC §10632.5]. The CWC now requires urban water suppliers to specifically address seismic risk to various water system facilities and to have a mitigation plan. Water supply infrastructure planning is correlated with the regional hazard mitigation plan associated with the urban water supplier. The City's seismic risk is discussed in Chapter 8 of this plan.
- **Energy Use Information** [CWC §10631.2]. The CWC now requires urban water suppliers to include readily obtainable information on estimated amounts of energy for their water supply extraction, treatment, distribution, storage, conveyance, and other water uses. The reporting of this information was voluntary in 2015. The City's energy use information is provided in Chapter 6 of this plan.
- **Water Loss Reporting for Five Years** [CWC §10608.34]. The CWC added the requirement to include the past five years of water loss audit reports as part of this UWMP. The City's water loss reporting is provided in Chapter 4 of this plan.
- **Water Shortage Contingency Plan [**CWC §10632]. In 2018, the Legislature modified the UWMP laws to require a Water Shortage Contingency Plan (WSCP) with specific elements. The WSCP is a document that provides the urban water supplier with an action plan for a drought or catastrophic water supply shortage. Although the new requirements are more prescriptive than previous versions, many of these elements have long been included in WSCPs, other sections of UWMPs, or as part of the urban water supplier's standard procedures and response actions. Many of these actions were implemented by the urban water suppliers during the last drought to successfully meet changing local water supply challenges. The WSCP is used by DWR, the State Water Resources Control Board (SWRCB), and the Legislature in addressing extreme drought conditions or statewide calamities that impact water supply availability. The City's WSCP is presented in Chapter 8 and Appendix K of this plan.

- **Groundwater Supplies Coordination** [CWC §10631(b)(4)]. In 2014, the Legislature enacted the Sustainable Groundwater Management Act to address groundwater conditions throughout California. The CWC now requires 2020 UWMPs to be consistent with Groundwater Sustainability Plans in areas where those plans have been completed by Groundwater Sustainability Agencies. This requirement is addressed in Chapter 6 of this plan.
- **Lay Description** [CWC §10630.5]. The Legislature included a new statutory requirement for the urban water supplier to include a lay description of the fundamental determinations of the UWMP, especially regarding water service reliability, challenges ahead, and strategies for managing reliability risks. This section of the UWMP could be viewed as a go-to synopsis for new staff, new governing members, customers, and the media, and it can ensure a consistent representation of the urban water supplier's detailed analysis. This requirement is addressed in the Executive Summary of this plan.
- **Water Loss Management** [CWC §10608.34(a) (1)]. The Legislature included a requirement for urban water suppliers to report on their plan to meet the water loss performance standards in their 2020 UWMPs. This requirement is addressed in the Demand Management Measures presented in Chapter 9 of this plan.

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

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

1. Complete an Urban Water Management Plan;
2. Identify, evaluate, and commence implementation of programs and projects included in the UWMP that are locally cost effective and technically feasible in reducing reliance on the Delta; and
3. Include expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance in their UWMPs, commencing in their 2015 UWMPs and continuing in their subsequent UWMPs. Programs and projects identified above should reduce the amount or percentage of water used from the Delta watershed. For the purposes of reporting, water efficiency is considered a new source of water supply.

The City's wholesale water supplier is Zone 7 Water Agency (Zone 7), who is a contractor of the State Water Project (SWP). Through Zone 7, the City anticipates participating in a covered action and is therefore required to demonstrate reduced Delta reliance. Appendix B of this UWMP demonstrates the City's consistency with Delta Plan Policy WR P1.

The City completed and adopted its 2015 UWMP in June 2016. This 2020 UWMP was completed and presented for adoption to the City Council on June 1, 2021. Chapter 6 (Water Supply) of the City's 2015 and 2020 UWMPs describes and evaluates existing and future projects whose implementation improves

regional self-reliance. Chapter 9 (Demand Management Measures) of the City's 2015 and 2020 UWMPs describes demand management measures that the City has implemented as part of its Water Conservation Program.

## 1.5 PLAN ORGANIZATION

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

This 2020 UWMP is organized into the following chapters:

- Chapter 1: Introduction
- Chapter 2: Plan Preparation
- Chapter 3: System Description
- Chapter 4: Water Use Characterization
- Chapter 5: SBX7-7 Baselines, Targets, and 2020 Compliance
- Chapter 6: Water Supply Characterization
- Chapter 7: Water Service Reliability and Drought Risk Assessment
- Chapter 8: Water Shortage Contingency Plan
- Chapter 9: Demand Management Measures
- Chapter 10: Plan Adoption, Submittal, and Implementation

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

- Appendix A: Legislative Requirements
- Appendix B: Demonstration of Reduced Delta Reliance
- Appendix C: DWR 2020 Urban Water Management Plan Tables
- Appendix D: DWR 2020 Urban Water Management Plan Checklist
- Appendix E: Agency and Public Notices
- Appendix F: 2019 Distribution System Water Loss Audit
- Appendix G: SB X7-7 Compliance Form
- Appendix H: Zone 7 Annual Report for the Sustainable Groundwater Management Program 2019 Water Year (Executive Summary)
- Appendix I: Zone 7 Water Supply Reliability Policy (Resolution No. 13-4230)
- Appendix J: DERWA Resolution No. 19-3
- Appendix K: Water Shortage Contingency Plan
- Appendix L: UWMP and WSCP Adoption Resolutions

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

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 D.

# CHAPTER 2
# Plan Preparation

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

## 2.1 BASIS FOR PREPARING A PLAN

The Act requires every "urban water supplier" to prepare and adopt a UWMP, to periodically (at least once every five years) review its UWMP, and make any amendments or changes that are indicated by the review. An "urban water supplier" is defined as a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually (AFY).

The City is a water retailer and manages Water System CA0110008. As shown in Table 2-1, in 2020, the City provided water to 22,369 customer connections and supplied 14,779 acre-feet (AF) of water. Therefore, the City is required to prepare a UWMP. The City's last UWMP, the 2015 UWMP, was adopted by the City Council on June 7, 2016.

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

| Public Water System Number | Public Water System Name | Number of Municipal Connections 2020 | Volume of Water Supplied 2020 * |
|---|---|---|---|
| CA0110008 | City of Pleasanton | 22,369 | 14,779 |
| | **TOTAL** | 22,369 | 14,779 |
| **** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.* | | | |
| NOTES: Volumes are in acre-feet (AF); number of connections and volume of water supplied is for potable water system only. | | | |

## 2.2 REGIONAL PLANNING

As described in Section 2.3 below, the City has prepared this 2020 UWMP on an individual reporting basis, not part of a regional planning process. However, the City regularly coordinates with its water wholesaler, Zone 7, to ensure that a safe and reliable water supply is delivered to its existing customers and that plans for serving future customers are implemented as efficiently as possible. The City also routinely coordinates with the region's other water retailers—DSRSD, Livermore, and Cal Water—on water supply and water conservation matters, including preparation of Zone 7's 2019 Water Supply Evaluation (WSE), 2020 UWMP, and WSCP update. Additionally, the City coordinates with the San Francisco Public Utilities Commission, which supplies water to the unincorporated Castlewood area and the Town of Sunol, which are adjacent to the City. Zone 7 also assisted the City in the preparation of this UWMP.

## 2.3 INDIVIDUAL OR REGIONAL PLANNING AND COMPLIANCE

This 2020 UWMP has been prepared on an individual reporting basis covering only the City's service area, see Table 2-2. The City does not participate in a regional alliance, and it has not prepared a Regional Urban Water Management Plan (RUWMP). As described below in Section 2.5, the City has notified and coordinated planning and compliance with appropriate regional agencies and constituents, including Zone 7, DSRSD, Livermore, and Cal Water.

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

| Select Only One | Type of Plan | | Name of RUWMP or Regional Alliance *if applicable* (select from drop down list) |
|---|---|---|---|
| ☑ | **Individual UWMP** | | |
| | ☐ | Water Supplier is also a member of a RUWMP | |
| | ☐ | Water Supplier is also a member of a Regional Alliance | |

## 2.4 FISCAL OR CALENDAR YEAR AND UNITS OF MEASURE

The City is a water retailer.

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

The water volumes in this 2020 UWMP are reported in units of acre-feet (AF).

The City's reporting methods for this 2020 UWMP are summarized in Table 2-3.

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

| Type of Supplier (select one or both) | |
|---|---|
| ☐ | Supplier is a wholesaler |
| ☑ | Supplier is a retailer |
| **Fiscal or Calendar Year (select one)** | |
| ☑ | UWMP Tables are in calendar years |
| ☐ | UWMP Tables are in fiscal years |
| **Units of measure used in UWMP * (select from drop down)** | |
| Unit | AF |
| **** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.* | |

## 2.5 COORDINATION AND OUTREACH

This section includes a discussion of the City's inter-agency coordination and coordination with the general public. The UWMP Act requires the City to coordinate the preparation of its UWMP and updates to its WSCP 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 Zone 7 (the region's water wholesaler) and DSRSD, Livermore, and Cal Water (the region's other water retailers). These agencies, as well as the public, participated in the coordination and preparation of this 2020 UWMP, including the WSCP update, and are summarized below.

### 2.5.1 Wholesale and Retail Coordination

The City is one of four water retailers that purchase water on a wholesale basis from Zone 7. As noted in Table 2-4, the City notified Zone 7 of the development of its 2020 UWMP and provided Zone 7 with a copy of the draft plan. In addition, the City has participated in the development of Zone 7's 2020 UWMP by providing the City's water demand projections and commenting on Zone 7's Draft UWMP. The City, in turn, received information from Zone 7 on its existing and planned sources of water.

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

| The retail Supplier has informed the following wholesale supplier(s) of projected water use in accordance with Water Code Section 10631. |
|---|
| Wholesale Water Supplier Name |
| Zone 7 Water Agency (Zone 7) |

## 2.5.2 Coordination with Other Agencies and the Community

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

As part of the 2020 UWMP and WSCP update, the City facilitated a public review period. Public noticing, pursuant to Section 6066 of the Government Code, was conducted prior to commencement of a public comment period. Public hearing notices are included in Appendix E of this plan. During the public comment period, the Draft UWMP, which includes an updated WSCP, was made available at the City's Operations Service Center, the Pleasanton Public Library, and on the City's website (www.cityofpleasantonca.gov). The City also held a duly noticed Council Water Subcommittee meeting on May 20, 2021.

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

- County of Alameda
- Zone 7 Water Agency
- Dublin San Ramon Services District
- City of Livermore
- California Water Service - Livermore District

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

## 2.5.3 Notice to Cities and Counties

CWC Section 10621 (b) requires agencies to notify the cities and counties to which they serve water at least 60 days in advance of the public hearing that the plan is being updated and reviewed. In December 2020, a notice of preparation was sent to the cities and counties and other stakeholders to inform them of the UWMP and WSCP update process and schedule, and to solicit input for the 2020 UWMP and updated WSCP. In addition to the agencies listed in Section 2.5.2, these include:

- San Francisco Public Utilities Commission
- Pleasanton Unified School District
- Pleasanton Chamber of Commerce
- Pleasanton Downtown Association
- Sunol Citizen's Advisory Council
- Hacienda Business Park Owners Association

A notice also included information on the amendment of the City's 2015 UWMP to incorporate demonstration of consistency with Delta Plan Policy WR P1. Copies of the notifications are included in Appendix E. The notifications to cities and counties, the public hearing notifications, and the public hearing and adoption are discussed in Chapter 10.

# CHAPTER 3
# System Description

This chapter describes the City's water system facilities and service area. In addition, this chapter discusses the climate, population, demographics, and land use within the City's service area.

## 3.1 GENERAL DESCRIPTION

Pleasanton's inception can be traced back to the 1850's as a stagecoach stop along the main route to the gold fields. The City was incorporated in 1894, and in the twentieth century it grew into a thriving agricultural center with the production of grain, hay, and hops. The City is approximately 22 square miles and is located in southeastern Alameda County at the junction of Interstate 580 and Interstate 680. Water service is currently provided to all City residents and commercial customers, as well as portions of unincorporated Alameda County (i.e., Remen Tract, Happy Valley, and the area west of Foothill/Sunol).

## 3.2 SERVICE AREA BOUNDARY

The City's water service area includes the City, as well as customers in unincorporated Alameda County in Remen Tract, along Happy Valley Road and Kilkare Canyon Road (just north of the Town of Sunol), and west of Foothill Road. Pleasanton's service area lies within the Alameda Creek watershed, a drainage basin covering about 675 square miles between Mount Hamilton and Mount Diablo. Figure 3-1 shows the City's limits and its current water service area.

The City lies predominantly on flat land formed by alluvial deposits from prehistoric streams flowing through the Livermore, Amador, and San Ramon Valleys to the San Francisco Bay. Geologic activity in the area has resulted in varying deposits of sand and gravel in the northeastern portion of the City, and once supported the cultivation of crops and livestock. Modernly, Pleasanton has predominately been urbanized, with the exception of several vineyards at the eastern edge of the City and livestock grazing on Pleasanton Ridge and in the Southeastern Hills.

The majority of Pleasanton occupies the Valley floor, which ranges in elevation from approximately 320 to 400 feet. Pleasanton is enclosed by hills on the west and southeast. The Pleasanton and Main Ridges to the west rise sharply above Foothill Road to peaks of 1,500 feet. These two ridges remain seismically active and feature complex terrain, densely wooded vegetation, and landslide prone soils. A series of gentle to steeply sloping hills extend south from Pleasanton into a valley containing the San Antonio Reservoir.

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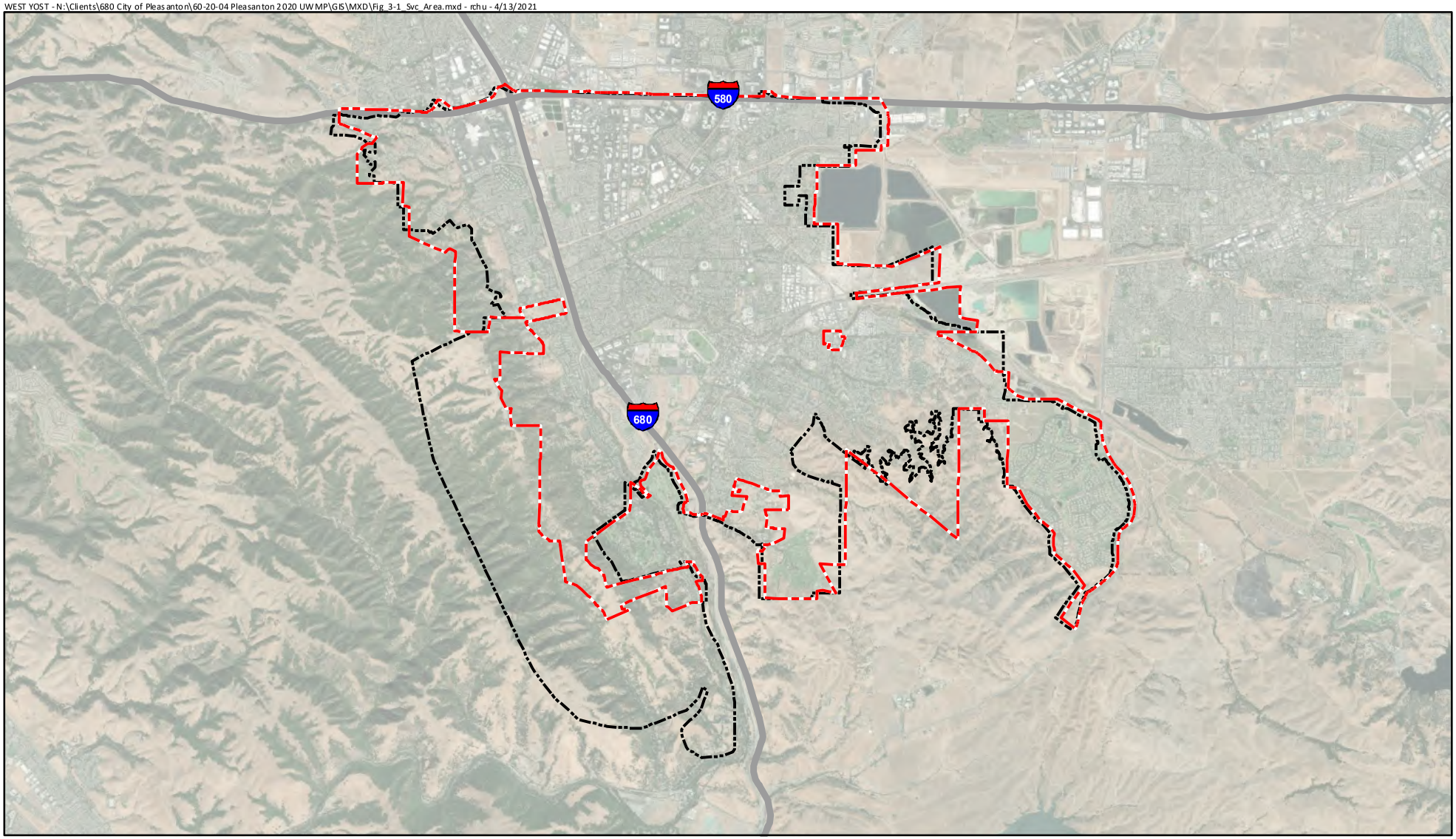
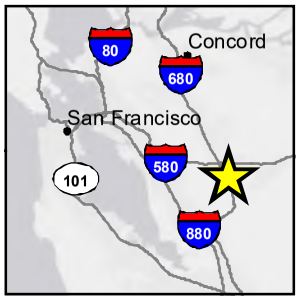



City Limits

Water Service Area

N

0 4,000 8,000

Scale in Feet

THE CITY OF PLEASANTON

WEST YOST

**Figure 3-1**

**City of Pleasanton Limits and Current Water Service Area**

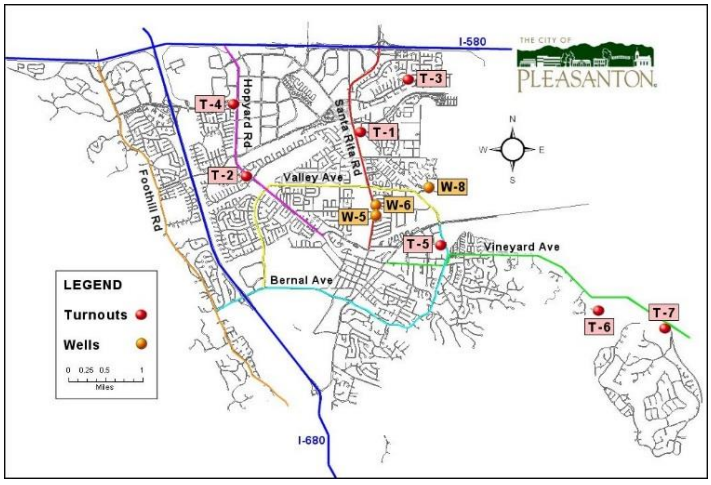
**City of Pleasanton**
2020 Urban Water Management Plan

# 3.3 WATER SYSTEM DESCRIPTION

## 3.3.1 Zone 7 Supply Turnouts

Water from Zone 7 enters the City's water system at seven different turnout locations, as follows:

- Turnout 1 is located on Santa Rita Road near Stoneridge Drive
- Turnout 2 is located on Hopyard Road near Valley Trails Drive
- Turnout 3 is located at the east end of West Las Positas Boulevard near Gulfstream Street
- Turnout 4 is located on Hopyard Road at Stoneridge Drive
- Turnout 5 is located on Bernal Avenue at Nevada Street
- Turnout 6 is located on Machado Drive at Vineyard Avenue
- Turnout 7 is located on Vineyard Avenue at Ruby Hills Boulevard



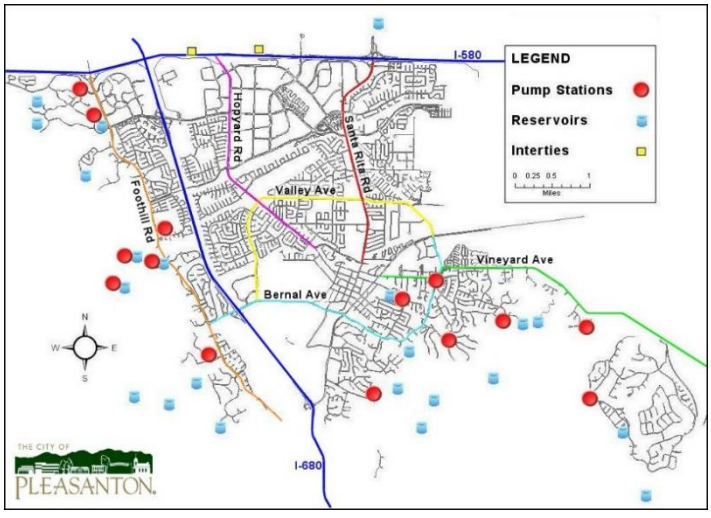

All turnouts are equipped with facilities to fluoridate the water provided by Zone 7 prior to entering the City system. Turnouts 1, 2, 3, 4, and 5 directly connect to the City system, while turnouts 6 and 7 supply water pump stations that pump into the City water system.

## 3.3.2 Groundwater Wells

The City owns and operates three groundwater wells. Water from the City's wells is treated with chlorine, ammonia, and fluoride at the well sites prior to entering into the water distribution system.

## 3.3.3 City Potable Water Distribution System

The City's distribution system currently consists of approximately 327 miles of pipelines and 22,369 water service connections. There are 14 pump stations, 22 water storage reservoirs, and one hydropneumatic tank in the distribution system. The City service area has 14 different pressure zones.



### 3.3.4 Emergency Interties

The City currently has two existing pipeline interties with DSRSD and one pipeline intertie with the City of Livermore for rapid emergency response. These interties are strictly for emergency conditions, such as a major pipeline break, supply contamination, or interruption of deliveries due to earthquake, flood, or other disaster.

### 3.3.5 Recycled Water Facilities

In June 2015, construction began on the City's Recycled Water Project (RW Project), which included the construction of approximately 51,500 lineal feet (LF) of new recycled water pipeline, ranging in diameter from 6 inches to 20 inches, and repurposing approximately 22,400 LF of existing potable pipeline into the recycled water system. The RW Project was funded through a Clean Water State Revolving Fund Program loan and Proposition 1 Program Grant Agreement with the SWRCB, with the goal of largely replacing existing potable irrigation demands along the distribution system with recycled water; thereby reducing potable water demands.

Construction of the RW Project was substantially completed by September 2016. Currently, the City has connected 92 out of 98 projected sites (144 out of 161 metered connections).

## 3.4 SERVICE AREA CLIMATE

The City's climate is characteristically Mediterranean, with hot, dry summers and cool, moist winters. This section discusses historical climate in City's water service area and potential effects of climate change.

### 3.4.1 Historical Climate

The historical climate characteristics affecting water management in the City's water service area, including average evapotranspiration ($ET_o$), rainfall, and temperature, are shown in Table 3-1. The average annual precipitation is approximately 17.2 inches, while the total evapotranspiration is approximately 51.5 inches, and average monthly temperatures vary from 47 to 70 degrees Fahrenheit throughout the year.

| Table 3-1. Monthly Average Climate Data Summary | | | |
|---|---|---|---|
| Month | Standard Monthly Average $ET_o$[(a)], inches | Average Total Rainfall[(b)], inches | Average Temperature[(b)], degrees Fahrenheit |
| January | 1.51 | 2.83 | 47.4 |
| February | 2.17 | 2.70 | 50.6 |
| March | 3.63 | 2.95 | 53.8 |
| April | 4.94 | 1.47 | 56.9 |
| May | 6.16 | 0.57 | 61.1 |
| June | 7.10 | 0.23 | 67.0 |
| July | 7.53 | 0.09 | 70.2 |
| August | 6.61 | 0.09 | 69.3 |
| September | 4.98 | 0.12 | 67.2 |
| October | 3.50 | 1.09 | 61.0 |
| November | 1.93 | 1.66 | 52.6 |
| December | 1.41 | 3.36 | 47.1 |
| **Total** | **51.5** | **17.2** | **--** |

(a) Source: California Irrigation Management Information System (CIMIS) data for Station #191: Pleasanton (downloaded November 11, 2020).
(b) Source: CIMIS data for Station #191: Pleasanton (data from October 2004 through October 2020).

## 3.4.2 Potential Effects of Climate Change

California Water Code now requires water suppliers to account for the impacts of climate change on water supplies and supply reliability. A discussion of the effects of climate change on water demands, supplies, and reliability can be found in Chapter 4, Chapter 6, and Chapter 7 of this UWMP. This section summarizes those discussions.

In general, climate change is expected to increase water demand for irrigation and the year-to-year variability of demands. This is the result of increased temperatures (which increases evapotranspiration) and more variability in precipitation (which impacts supply availability and reliability). Also, natural disasters such as wildfires, droughts, and floods are expected to increase in both frequency and intensity.

Responding to climate change generally takes two forms: mitigation and adaptation. Mitigation is taking steps to reduce the contribution to the causes of climate change by reducing greenhouse gas (GHG) emissions. Adaptation is the process of responding to the effects of climate change by modifying systems and behaviors to function in a warmer climate.

In the water sector, climate change mitigation is generally achieved by reducing energy use, increasing energy efficiency, and/or substituting fossil fuel-based energy sources for renewable energy sources. Because water requires energy to move, treat, use, and discharge, water conservation results in energy conservation. Adaptation initiatives include diversification of the City's water supply portfolio and expanding recycled water use.

## 3.5 SERVICE AREA POPULATION AND DEMOGRAPHICS

During the past two decades, the City has experienced a diverse pattern of growth including substantial new residential, commercial, office, and industrial development. As a small suburban city, the City has developed a reputation as a desirable place in which to live and work, with an excellent school system, fine parks and recreational facilities, a traditional downtown area, and a low crime rate. Land use planning within the City's service area is guided by the City's *General Plan (2005-2025)* and *Housing Element (2015-2023).*

Single family residential remains the largest water customer sector in Pleasanton (59 percent of all potable demands in 2020).

### 3.5.1 Service Area Population

Based on Census data[1] and persons-per-connection adjustments, the City's 2020 service area population was estimated to be 82,977. Future population estimates for the City's service area are based on Zone 7's *2020 Tri-Valley Municipal and Industrial Water Demand Study*[2] (Regional Demand Study). By 2045, Pleasanton's population is projected to grow by approximately 22 percent to 100,913.

The current and projected populations in the City's service area are presented in Table 3-2.

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

| Population Served | 2020 | 2025 | 2030 | 2035 | 2040 | 2045*(opt)* |
|---|---|---|---|---|---|---|
| | 82,977 | 86,326 | 91,430 | 96,171 | 100,913 | 100,913 |

### 3.5.2 Other Social, Economic, and Demographic Factors

The State now requires the inclusion of service area socioeconomic information as part of the system description in UWMPs. However, differences in household water use across sociodemographic groups in the City have not been studied, nor does the City differentiate water management by sociodemographic factors. To comply with the new regulation, the following social, economic, and demographic information from the U.S. Census Bureau[3] is provided. Information is for the five-year period from 2015 to 2019.

- The average number of people per household was 2.8
- The median household income was $156,400
- The owner-occupied housing unit rate was 69.9 percent, with a median owner-occupied home value of $986,800
- The median age was 42.4 years

[1] United States Census Bureau. American Community Survey, 2019: ACS 1-Year Estimates Data Profiles for Pleasanton, CA.

[2] Woodard & Curran, January 2021 Draft. *2020 Tri-Valley Municipal and Industrial Water Demand Study*. www.zone7water.com/library/reports-planning-documents.com

[3] United States Census Bureau. American Community Survey, 2015-2019 ACS 5-Year Data Profile for Pleasanton, CA.

- Of persons 25 years or older, 96.1 percent had earned at least a high school diploma or equivalent, and 64.9 percent had earned a bachelor's degree or higher
- By race/ethnicity, 50.1 percent of people were White, 1.8 percent were Black, 0.3 percent were American Indian or Alaska Native, 34.1 percent were Asian, 0.5 percent were Hawaiian Native or Pacific Islander, 3.6 percent were two or more races, and 9.5 percent were Hispanic or Latino (of any race)
- 32.0 percent of residents were foreign born

## 3.6 LAND USES WITHIN SERVICE AREA

### 3.6.1 Current and Projected Land Uses

This section describes the City's current and projected land uses in its service area. Land use information is based on the City's current General Plan[4], as well as Zone 7's Regional Demand Study. Adopted in 2009, the City's General Plan guides land development and resource conservation efforts through 2025. The Land Use Element of the General Plan provides policies and maps that guide the use of public and open-space lands and specify the location, amount, and potential density and intensity for development of residential, commercial, and industrial lands.

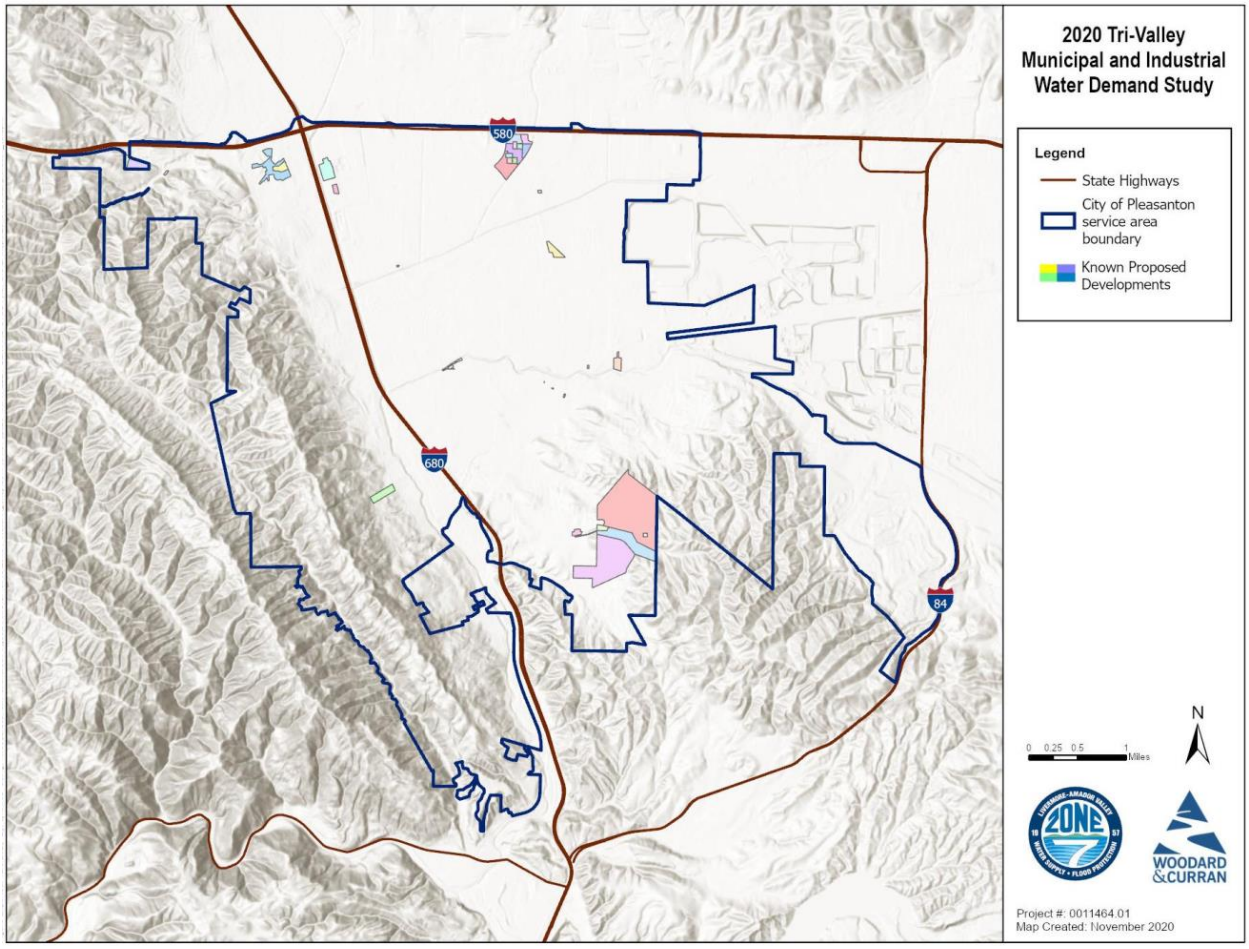
Existing land use within the City generally consists of distinct residential neighborhoods typically separated from non-residential land uses to minimize the potential incompatibility of non-residential and residential uses. The City was predominantly a residential community until 1980, when it saw increased development of industrial, commercial, and office uses. This non-residential development includes the Stoneridge Mall, seven major business parks, five major hotels, and a variety of service centers. Abundant open space surrounds the developed areas of the City.

The City's current General Plan encourages mixed land uses and transit-oriented development (TOD), particularly near the Bay Area Rapid Transit (BART) stations, for future growth. Mixed use development combines office, commercial, hotel, institutional, and residential land uses on a single site or adjacent, interrelated sites. TOD provides walkable, mixed use communities designed around transit stations. Mixed use developments (including TODs) would provide people the opportunity to use alternative modes of transportation to automobiles since residential and non-residential land uses would be combined or integrated on a single or nearby site.

To identify future growth in the City's service area for Zone 7's Regional Demand Study, the City's Community Development Department provided a list of known proposed development projects. These proposed projects include mixed use, single family residential, and multi-family residential developments and are shown on Figure 3-2 (which is adapted from Figure 2-2 of the Regional Demand Study). As detailed in Chapter 4 of this plan, single family and multi-family residential water use accounts for approximately 45 and 31 percent, respectively, of additional demand compared to 2020[5].

[4] City of Pleasanton, 2005. *Pleasanton General Plan 2005-2025*. https://www.cityofpleasantonca.gov/gov/depts/cd/planning/general.asp

[5] These percentages are based on 2020 demand as presented in Zone 7's Regional Demand Study, which differs from the City's actual 2020 billed consumption. Since customer classes in City billing data differ from the customer sectors used in the Regional Demand Study, it is difficult to directly compare demand projections and actual 2020 demands.




*Source: Zone 7 Regional Demand Study, Figure 2-2*

**Figure 3-2. Known Proposed Developments**

## 3.6.2 Long-Range Land Use Planning

This section discusses long-range land use planning that may affect water management. Long-range planning includes years beyond the planning horizon of this UWMP but should be noted for consideration in future UWMP updates.

The Association of Bay Area Governments (ABAG) and Metropolitan Transportation Commission (MTC) are preparing Plan Bay Area 2050, which provides long-range plans to guide the growth of the nine-county region. Plan Bay Area 2050 is expected to be completed in 2021 and integrates strategies for transportation, housing, the environment, and the economy. The City is also planning to begin updating the Housing Element of the General Plan in spring of 2021. The objective of the Housing Element update is to plan for the number of housing units allocated to the City by ABAG,[6] known as the Regional Housing Needs Allocation (RHNA).

[6] ABAG receives its regional housing needs determination from the California State Department of Housing and Community Development (HCD). The nine-county San Francisco Bay Area has been allocated a total of 441,176 units, which reflects a 2.3-fold increase over the previous Housing Element cycle.

Though both Plan Bay Area and RHNA address the amount and location of new housing development in the region, they are different types of planning processes. Plan Bay Area is a policy-driven land use and transportation framework that results in various projections of growth for different areas (i.e., a "ground up" model). RHNA, on the other hand, is a process whereby a pre-determined number of housing units is distributed among local jurisdictions, based on factors intended to result in an equitable distribution of those units. Another key difference between the two is that Plan Bay Area covers an approximately 30-year planning horizon (2020-2050), whereas RHNA covers an 8-year period from 2022-2030. Despite these differences, by law, the RHNA must be "consistent" with Plan Bay Area. ABAG has determined RHNA and Plan Bay Area to be consistent because the amount of housing growth from the 8-year RHNA would not exceed the 30-year growth level at the county and sub-county geographies used in Plan Bay Area.

ABAG published the *Draft RHNA Methodology Release* in December 2020 to support Plan Bay Area 2050; this methodology has been used to develop "illustrative" RHNA allocations for each city and county in the region. Allocations will be finalized in 2021 through the remaining steps of the RHNA process. The proposed allocation for the City, which may be subject to revision and refinement, is 5,965[7], which is below the City's projected household projections. Although the City's RHNA allocation may not affect its long-term water demand projections, it may accelerate the rate at which demand increases in the near term.

ABAG will approve a Final Methodology and issue Draft Allocations in spring 2021. This will be followed by an appeal period, with ABAG issuing Final Allocations by the end of 2021.

[7] Association of Bay Area Governments, December 2020, *Release of ABAG Draft RHNA Methodology and Final Subregional Shares*, Appendix 3.

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# CHAPTER 4
# Water Use Characterization

This chapter describes and quantifies the City's historical, current, and projected water uses. Water use projections are provided in five-year increments to the year 2045, as well as on a yearly basis for the next five years (2021-2025). This chapter also presents the City's water losses for the previous five years, projects future water use for lower income households, and discusses the impact of climate change on water use.

## 4.1 NON-POTABLE VERSUS POTABLE WATER USE

The City currently provides both potable water and recycled water to customers within its service area. Potable water is water that is safe to drink and typically has had various levels of treatment and disinfection. The City receives its potable water supply from two sources: purchases from Zone 7 and groundwater pumped from City wells.

Non-potable water is not intended for consumption and includes both recycled water and raw water. Raw water is untreated water that is used in its natural state or with minimal treatment. However, the City does not deliver raw water to any customers in its service area. Recycled water is municipal wastewater that has been treated to a specified quality that allows for re-use.

The City receives recycled water from Livermore and through the San Ramon Valley Recycled Water Program (SRVRWP), which is operated by a joint powers authority between DSRSD and the East Bay Municipal Utility District (EBMUD) called the DSRSD-EBMUD Recycled Water Authority (DERWA). Both the SRVRWP and the Livermore Water Reclamation Plant (LWRP) provide recycled water to landscape irrigation customers that meets Title 22 disinfected tertiary recycled water requirements.

The City's water supplies are described further in Chapter 6.

## 4.2 WATER USE BY SECTOR

This section describes the City's past, current, and projected water use by sector through the year 2045 in five-year increments. Water demand projections are based on Zone 7's Regional Demand Study and retailer delivery requests and provide the basis for sizing and staging future water facilities to ensure adequate supply. This section identifies the water usage among water use sectors including single family residential, multi-family 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 an attached or detached secondary dwelling.
- **Multi-Family Residential**: 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.
- **Sales to Other Agencies**[8]: Water sales made to another agency. Projected sales may be based on projected water demand provided by the receiving agency. There is inherent uncertainty in future demand projections, therefore, any projected sales reported in the UWMP are for planning purposes only and are not considered a commitment on the part of the seller.
- **Groundwater Recharge**: The managed and intentional replenishment of natural groundwater supplies using man-made conveyances such as filtration basins or injection wells. This includes water used for groundwater banking or storage.
- **Saline Water Intrusion Barriers**: Injection of water into a freshwater aquifer to prevent the intrusion of saltwater.
- **Agricultural**: Water used for commercial agricultural irrigation.
- **Other**: Any other water demand that is not adequately described by the water sectors defined above.
- **Distribution System Losses**: The difference between the actual volume of water treated and delivered into the distribution system and the actual metered consumption.

## 4.2.1 Historical Water Use

The City's past water use among water use sectors is reported in Table 4-1. These are the same values reported in the City's 2015 UWMP.

**Table 4-1. Historical Water Use by Sector**

| Water Use Sector | Actual Volume, AFY | | |
|---|---|---|---|
| | 2005 | 2010 | 2015 |
| Single Family | 9,035 | 8,326 | 5,264 |
| Multi-Family | 744 | 842 | 943 |
| Industrial | 64 | 57 | 40 |
| Landscape | 4,678 | 4,015 | 2,357 |
| Commercial and Institutional | 1,977 | 1,809 | 1,392 |
| Losses[(a)] | 1,562 | 1,082 | 1,359 |
| **Total** | **18,060** | **16,131** | **11,355** |

(a) Also includes system flushing, known leaks, and unbilled unmetered use.

[8] The City has not sold water to other agencies in the past and does not plan to do so in the future.

## 4.2.2 Current Water Use

The City's actual potable water demands for the 2020 calendar year are reported in Table 4-2.

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

| Use Type | 2020 Actual[1] | | |
|---|---|---|---|
| | Additional Description (as needed) | Level of Treatment When Delivered Drop down list | Volume[2] |
| Single Family | | Drinking Water | 7,904 |
| Multi-Family | | Drinking Water | 1,299 |
| Commercial | | Drinking Water | 1,215 |
| Industrial | | Drinking Water | 58 |
| Landscape | | Drinking Water | 2,996 |
| Losses | | Drinking Water | 1,308 |
| | | **TOTAL** | 14,779 |

[1] *Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4.*
[2] *Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: Volumes are in AF; losses are estimated based on supply and billing data.

Existing recycled water demands are discussed in Chapter 6.

## 4.2.3 Projected Water Use

This section presents water demand projections for the City's service area. Water demand projections in this 2020 UWMP are based on projections developed for Zone 7's Regional Demand Study. This section details water demand projections on a 25-year planning horizon and, for the Drought Risk Assessment (DRA), a characteristic five-year basis.

### *4.2.3.1 25-Year Planning Horizon*

The City's projected water demands through the year 2045 are presented in Table 4-3. Demands in 2040 and 2045 are from the Regional Demand Study, with demands for the interim period (2025-2035) developed in coordination with Zone 7 based on linear interpolation of near-term retailer delivery requests and the 2040 projection from the Regional Demand Study. There are no existing or projected uses for saline barriers, groundwater recharge, conjunctive use, or raw water use within the City's service area.

The City projects 1,500 AFY of recycled water demand in 2025, increasing to 1,800 AFY by 2040 and remaining at 1,800 AFY in 2045. Approximately 500 AF of the projected recycled water demand in 2040 is assumed to be new landscape and construction water demands. The remaining 1,300 AF of projected recycled water demand will offset existing landscape demands currently met with potable water and is therefore not included in Table 4-3.

**Table 4-3. Use for Potable and Non-Potable Water – Projected (DWR Table 4-2 Retail)**

| Use Type | Additional Description (as needed) | Projected Water Use[1,2] *Report To the Extent that Records are Available* | | | | |
|---|---|---|---|---|---|---|
| | | 2025 | 2030 | 2035 | 2040 | 2045 (opt) |
| Single Family | | 8,952 | 9,219 | 9,485 | 9,752 | 9,752 |
| Multi-Family | | 1,472 | 1,515 | 1,559 | 1,603 | 1,603 |
| Commercial | | 1,376 | 1,417 | 1,458 | 1,499 | 1,499 |
| Industrial | | 66 | 68 | 70 | 72 | 72 |
| Landscape | | 3,393 | 3,494 | 3,595 | 3,696 | 3,696 |
| Losses | | 1,482 | 1,526 | 1,570 | 1,614 | 1,614 |
| **TOTAL** | | 16,740 | 17,239 | 17,737 | 18,236 | 18,236 |

NOTES:
[1]Recycled water demands are NOT reported in this table. Recycled water demands are reported in UWMP Table 6-5 (DWR Table 6-4).
[2]Volumes are in AF.

Table 4-4 summarizes the City's actual demands and projected water use, along with recycled water demands reported in Chapter 6.

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

| | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 (opt) |
|---|---|---|---|---|---|---|
| Potable Water, Raw, Other Non-potable *From Tables 4-1R and 4-2 R*[1] | 14,779 | 16,740 | 17,239 | 17,737 | 18,236 | 18,236 |
| Recycled Water Demand *From Table 6-4*[1] | 1,228 | 1,500 | 1,650 | 1,650 | 1,800 | 1,800 |
| Optional Deduction of Recycled Water Put Into Long-Term Storage | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL WATER USE** | 16,007 | 18,240 | 18,889 | 19,387 | 20,036 | 20,036 |

NOTES: [1]Volumes are in AF. Table references refer to DWR table numbers.

### 4.2.3.2 Characteristic Five-Year Water Use

Water Code Section 10635(b) requires urban suppliers to include a five-year DRA in their UWMP. A key component of the DRA is estimating demands for the next five years (2021-2025) without drought conditions (i.e., unconstrained demand). Chapter 7 details the DRA, but the five-year demand projections are summarized in Table 4-5. Demand projections for 2021-2024 were developed in coordination with Zone 7 based on the City's near-term delivery requests.

**Table 4-5. Projected Water Demands for Drought Risk Assessment**

| | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|
| Potable Water Demand[(a)], AFY | 15,246 | 16,240 | 16,410 | 16,570 | 16,740 |

(a) Demand projections developed in coordination with Zone 7 based on the City's near-term delivery requests.

## 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 flushing.

The City uses the American Water Works Association (AWWA) method to annually evaluate its distribution system losses. Since the City is currently working on its water audit for the 2020 calendar year, water losses for the 2020 calendar year were estimated based on supply and billing data. In 2020, the City's water losses were estimated to be approximately 1,308 AF, or 8.8 percent of total water production—comparable with the other Tri-Valley water service providers. A copy of the City's 2019 Water Loss Audit worksheet is provided in Appendix F.

New regulations require retail water suppliers to include potable distribution system water losses for the preceding five years (to the extent records are available). Table 4-6 summarizes system losses for the previous five calendar years (2016 through 2020). At the time of preparation of this UWMP, DWR and the SWRCB are in the process of adopting water loss standards. This is discussed further in Chapter 9.

**Table 4-6. Last Five Years of Water Loss Audit Reporting (DWR Table 4-4 Retail)**

| Reporting Period Start Date (mm/yyyy) | Volume of Water Loss [1,2] |
|---|---|
| 01/2016 | 2,332 |
| 01/2017 | 1,504 |
| 01/2018 | 722 |
| 01/2019 | 923 |
| 01/2020 | 1,308 |
| *[1] Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.* *[2] **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.* | |
| NOTES: Volumes are in AF; 2020 Water Audit is in progress, so 2020 loss is an estimate based on supply and billing data. A copy of the City's 2019 Water Audit is provided in Appendix F. | |

## 4.4 ESTIMATING FUTURE WATER SAVINGS

Water savings from codes, standards, ordinances, or transportation and land use plans can decrease the water use for new and future customers. As indicated in Table 4-7, to be conservative, these "passive" water savings have not been included in the City's projected future water demands.

Table 4-7 indicates that lower income residential demands are included in the City's water demand projections, as is detailed in Section 4.5.

**Table 4-7. Inclusion in Water Use Projections (DWR Table 4-5 Retail)**

| | |
|---|---|
| **Are Future Water Savings Included in Projections?** (Refer to Appendix K of UWMP Guidebook) | No |
| If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, or otherwise are utilized in demand projections are found. | |
| **Are Lower Income Residential Demands Included In Projections?** | Yes |

## 4.5 WATER USE FOR LOWER INCOME HOUSEHOLDS

SB 1087 (2006) requires that water providers develop written policies that give priority to development that includes affordable housing to low income households. The projections shown in Table 4-3 include water use for single family and multi-family residential housing needed for low income households, as identified in the City's Housing Element. A lower income household is defined as a household that has an income below 80 percent of the Area Median Income, adjusted for family size. According to the American Census Bureau, 2018 American Community Survey 5-year Estimate, approximately 18.35 percent of City households are low income.

Therefore, approximately 18.35 percent of the City's residential water demands are attributed to low income households, assuming an average household size of four. This proportion is assumed to remain constant in the future, and apply equally for both single family and multi-family residential water use sectors. In other words, 18.35 percent of single family residential demands are assumed to be for low income single family households, and 18.35 percent of multi-family residential demands are assumed to be for low income multi-family households. The water demand projections for low income households are summarized in Table 4-8.

**Table 4-8. Projected Water Demands for Lower Income Households**

| Water Use Sector | Water Demands for Low Income Households[(a)], AFY | | | | |
|---|---|---|---|---|---|
| | 2025 | 2030 | 2035 | 2040 | 2045 |
| Single Family | 1,643 | 1,692 | 1,741 | 1,790 | 1,790 |
| Multi-Family | 270 | 278 | 286 | 294 | 294 |
| **Total** | **1,913** | **1,970** | **2,027** | **2,084** | **2,084** |

(a) Based on data from the American Census Bureau, 2018 American Community Survey 5-year Estimate.

## 4.6 CLIMATE CHANGE CONSIDERATIONS

The City's future water demand and use patterns may be impacted by climate change. Warmer temperatures are expected to increase landscaping and irrigation demand and lengthen the growing season. In addition, climate change may increase the frequency and intensity of wildfires, which would increase the fire industry's water demands. Expanded use of recycled water could mitigate the effects of climate change on water demands.

Zone 7's Regional Demand Study, which serves as the basis for the City's demand projections, accounts for climate change by increasing outdoor water demands 5 percent by 2040. This demand multiplier starts at 0 percent in 2020, increases linearly to 5 percent in 2040, and remains at 5 percent through 2045. As the actual impact of climate change on water use becomes clearer, this value can easily be updated in the model that informs the Regional Demand Study.

The potential impacts of climate change on the City's water supplies are described in Chapter 6.

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# CHAPTER 5
# SB X7-7 Baselines, Targets, and 2020 Compliance

In November 2009, the Water Conservation Act of 2009 was signed into law as part of a comprehensive water legislation package. Also known as Senate Bill X7-7 (SB X7-7), the Water Conservation Act of 2009 addressed both urban and agricultural water conservation and set a goal of achieving a 20 percent statewide reduction in urban per capita water use by December 31, 2020 (i.e., "20 by 2020").

This chapter demonstrates that the City has achieved its 2020 target reduction by reviewing the City's population and recent water use.

## 5.1 OVERVIEW AND BACKGROUND

To meet the urban water use target required by SB X7-7, each retail supplier was required to determine its baseline water use, as well as its target water use for the year 2020. Water use is measured in gallons per capita per day (GPCD).

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

The City's compliance with SB X7-7 was first addressed in its 2010 UWMP, in which the City determined its baseline per capita water use and established and adopted its urban water use targets for 2015 and 2020. SB X7-7 included a provision that an urban water supplier may update its 2020 urban water use target in its 2015 UWMP and may use a different target method than was used in 2010. Also, the SB X7-7 methodologies developed by DWR in 2011 noted that water suppliers may revise population estimates for baseline years when the 2010 Census information became available. The 2010 Census data was not finalized until 2012. In its 2015 UWMP, the City updated its population, baselines, and targets to reflect 2010 Census data. The City demonstrated that it successfully achieved its 2015 interim target and confirmed its 2020 target.

The 2020 Census results were not available for inclusion in this UWMP update. Thus, a population estimate (based on Census data and persons-per-connection adjustments) was used with actual water use data to calculate GPCD water use. Using this population estimate, the City verifies that it achieved its 2020 target per capita water use. The potential difference between population estimates herein and the eventual final 2020 Census results is not believed to impact the fundamental conclusions of meeting SB X7-7 requirements.

Compliance with the urban water use target requirement is provided in the SB X7-7 2020 Compliance Form, which is included in this plan as Appendix G.

## 5.2 GENERAL REQUIREMENTS FOR BASELINE AND TARGETS

SB X7-7 required each urban water retailer to determine its baseline daily per capita water use over a 10-year or 15-year baseline period. The 10-year baseline period is defined as a continuous 10-year period ending no earlier than December 31, 2004 and no later than December 31, 2010. SB X7-7 also defined that for those urban water retailers that met at least 10 percent of their 2008 water demand using recycled water, the urban water retailers can extend the baseline GPCD calculation for a maximum of a continuous 15-year baseline period, ending no earlier than December 31, 2004 and no later than

December 31, 2010. In 2008, the City delivered no recycled water; therefore, the City's baseline GPCD was calculated over a 10-year period. In its 2015 UWMP, the City selected a 10-year baseline period from 1996 through 2005. This is the same 10-year baseline period reported in the City's 2010 UWMP.

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

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

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

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

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

## 5.3 SERVICE AREA POPULATION

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

The City is a "Category 2" water supplier, meaning its distribution area overlaps with less than 95 percent of city boundaries, and it has an electronic geographic information system (GIS) map of its distribution area. DWR's Methodologies states that Category 2 water suppliers can estimate their service area populations using information from a water wholesaler, provided the information was developed using a per-connection methodology that uses population data from the CA Department of Finance (DOF) or the US Census Bureau.

To estimate its 2020 service area population, the City started with US Census Bureau estimates for 2019 (the most recent year available) and adjusted it on a persons-per-connection basis. Specifically, the City used the US Census Bureau's American Community Survey (ACS) 1-Year Data Profiles as a starting point. Since this population estimate is for 2019 and within City limits, it required updating for growth in 2020 and water service areas outside City limits (i.e., Remen Tract, Happy Valley, and the area west of

Foothill/Sunol). The City provided the number of residential connections added in 2020 and the number located outside City limits, which were converted to population assuming 3.65 persons-per-connection (an estimate from DWR's Population Tool for the City in 2020).

This methodology is summarized in Table 5-1 and estimates the City's 2020 service area population at 82,977, as shown in Table 5-2.

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

| Method Used to Determine 2020 Population (may check more than one) | |
|---|---|
| ☑ | **1. Department of Finance** (DOF) or **American Community Survey** (ACS) |
| ☑ | **2. Persons-per-Connection Method** |
| ☐ | **3. DWR Population Tool** |
| ☐ | **4. Other** DWR recommends pre-review |
| NOTES: ACS 1-Year estimate for City in 2019, adjusted using persons-per-connection for new connections in 2020 and any connections located outside City limits still served by the City. | |

**Table 5-2. 2020 Service Area Population (SB X7-7 Table 3)**

| 2020 Compliance Year Population | |
|---|---|
| **2020** | 82,977 |

## 5.4 GROSS WATER USE

Annual gross water use, as defined in CWC §10608.12 (h), is the water that enters the City's distribution system over a 12-month period (calendar year) with certain exclusions. As presented in Chapter 4 of this plan, the City's calendar year 2020 gross water use is 14,779 AF and is determined in accordance with DWR's Methodologies.

## 5.5 BASELINES AND TARGETS SUMMARY

Daily per capita water use is reported in GPCD. Annual gross water use is divided by annual service area population to calculate the annual per capita water use for each year in the baseline periods. As discussed in Section 5.1, the City updated its population data, adjusted its baseline, and confirmed its 2020 target in its 2015 UWMP. The City's 10-year base daily per capita water use is 246 GPCD. Using Method 1 for 2020 water use target calculation as described in Section 5.2, the City's confirmed 2020 compliance target is 197 GPCD. The City's baseline and target are summarized in Table 5-3.

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

| Baseline Period | Start Year * | End Year * | Average Baseline GPCD* | Confirmed 2020 Target* |
|---|---|---|---|---|
| 10-15 year | 1996 | 2005 | 246 | 197 |
| 5 Year | 2004 | 2008 | 245 | |
| **All cells in this table should be populated manually from the supplier's SBX7-7 Verification Form and reported in Gallons per Capita per Day (GPCD)* | | | | |

## 5.6 2020 COMPLIANCE DAILY PER CAPITA WATER USE

The City's 2020 population and gross water use are presented in Sections 0 and 5.4, respectively. The City calculated its actual daily per capita water use for the 2020 calendar year in accordance with DWR's Methodologies. As shown in Table 5-4, urban per capita water use in 2020 was 159 GPCD, which is well below the confirmed 2020 water use target of 197 GPCD. Therefore, the City has met its 2020 final water use target. The complete set of SB X7-7 tables used to document this compliance is included in Appendix G.

**Table 5-4. 2020 Compliance (SB X7-7 Table 9, DWR Table 5-2 Retail)**

| 2020 GPCD | | | 2020 Confirmed Target GPCD* | Did Supplier Achieve Targeted Reduction for 2020? Y/N |
|---|---|---|---|---|
| Actual 2020 GPCD* | 2020 TOTAL Adjustments* | Adjusted 2020 GPCD* *(Adjusted if applicable)* | | |
| 159 | 0 | 159 | 197 | Yes |
| **Reported in Gallons per Capita per Day (GPCD)* | | | | |
| NOTES: The City has elected not to make the allowable optional adjustments. | | | | |

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

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

## 5.7 REGIONAL ALLIANCE

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

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# CHAPTER 6
# Water Supply Characterization

This chapter describes the City's existing water supply portfolio, which consists of potable water purchased from Zone 7, recycled water produced by DSRSD and Livermore, and groundwater pumped by the City. These existing supplies, along with the other projected future supplies, and the potential for desalinated water, indirect or direct potable reuse, and exchanges or transfers are described in this chapter.

## 6.1 WATER SUPPLY ANALYSIS OVERVIEW

The City's primary water supply source is purchased potable water from Zone 7, supplemented by groundwater pumped from the Main Basin. The City's groundwater pumping is limited by its groundwater pumping quota (GPQ) as managed by Zone 7, the local groundwater basin manager. The City augments its potable water supply with recycled water from DSRSD and Livermore.

The management of each of the City's supply sources in correlation with each other are provided in this chapter. Because a significant portion of the City's potable water supply is from Zone 7, the region's water wholesaler, Zone 7's water supplies, storage operations, and future supply projects are discussed. Management and anticipated availability of the City's water supplies is discussed under normal water years. The availability of the City's water supplies under a single dry year and a drought lasting five years, as well as more frequent and severe periods of drought, are detailed in Chapter 7 of this UWMP.

## 6.2 WATER SUPPLY CHARACTERIZATION

This section 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:

- Potable water supplies (including imported and local surface water supplies and local groundwater supplies) purchased from Zone 7
- Local groundwater supplies pumped from City wells
- Recycled water supplies produced at DSRSD's Regional Wastewater Treatment Facility (RWTF) and the Livermore Water Reclamation Plant (LWRP)

These existing supplies, along with the other projected future supplies, and the potential for desalinated water, indirect or direct potable reuse, and exchanges or transfers are described in this section.

### 6.2.1 Purchased or Imported Water

The City currently receives most of its potable water supply from Zone 7, a multi-purpose agency that oversees water-related issues in the Livermore Amador Valley. Zone 7 is a State Water Project (SWP) contractor that wholesales treated water to four retail water agencies: the City, DSRSD, Livermore, and Cal Water. In addition, Zone 7 retails non-potable water supplies for irrigated agricultural use, retails treated water to several direct customers, provides and maintains flood control facilities, and manages groundwater and surface water supplies in its service area. Under its current agreement with Zone 7, the City is limited in developing other water supply sources.

#### *6.2.1.1 City Water Supply from Zone 7*

Zone 7 is the City's sole wholesale treated water supplier. The City purchases all potable water required for use within the City's service area from Zone 7, with the exception that the City may extract groundwater per the agreement provisions. The treated water delivered by Zone 7 complies with the Requirements for Drinking Water of the California Department of Health Services and the US Environmental Protection Agency, or their successor regulatory agencies.

Zone 7 is also the groundwater manager of the local groundwater basin described in Section 6.2.2. The City has a GPQ of 3,500 AF from the Livermore Valley Main Groundwater Basin (Main Basin) in any calendar year. The City pays Zone 7 a recharge fee for recharging the Main Basin. The City may carry over up to 700 AF of unused pumping quota from one year to another.

The City coordinates with Zone 7 on an ongoing basis to track water use and develop future water use projections.

#### *6.2.1.2 Zone 7 Water Supply Sources*

This section details Zone 7's water supplies and their management in relation with each other. Zone 7's water supply has two major components: 1) incoming water supplies available through contracts and water rights each year, and 2) accumulated water supplies in storage derived from previous years. Incoming water supplies typically consist of annually allocated imported surface water supply and local surface water runoff. Accumulated or "banked" water supplies are available in local and non-local storage locations.

To optimize use of its local resources, Zone 7 practices conjunctive use of the Livermore Valley Groundwater Basin. Zone 7 also stores local runoff from the Arroyo Valle watershed in the local reservoir (Lake Del Valle), which is owned and operated by DWR. Two long-term water storage ("banking") agreements with agencies south of Zone 7's service area in Kern County (Semitropic Water Storage District and Cawelo Water District) provide additional flexibility in managing annual fluctuations in supplies.

To mitigate the risk associated with significant reliance on imported water supply, Zone 7 continues to develop local sources of water and to diversify its water supply portfolio. In April 2019, Zone 7 completed its 2019 Water Supply Evaluation Update (2019 WSE Update), a follow-up to its 2016 Water Supply Evaluation Update that documents Zone 7's current water supplies based on new information and experience gained since the 2014-2016 drought. The 2019 WSE Update also evaluates various future water supply projects, some of which are discussed in Section 6.2.8.

##### 6.2.1.2.1 Imported Water from the State Water Project

Imported water from the SWP, which is owned and operated by DWR, is by far Zone 7's largest water source, providing over 80 percent of the treated water supplied to its customers on an annual average basis.

SWP water originates within the Feather River watershed, is captured in and released from Lake Oroville, and flows through the Delta before it is conveyed by the South Bay Aqueduct (SBA) to Zone 7 and two other water agencies: Valley Water (formerly known as Santa Clara Valley Water District) and Alameda County Water District (ACWD). Much of the SWP water continues to southern California via the California Aqueduct. Lake Del Valle is part of the SWP's SBA system and is used for storage of SWP water, as well as local runoff.

At Zone 7, SWP water is directly used to meet treated water demands from municipal and industrial customers—primarily wholesale to water retailers and some direct retail customers—and untreated water demands from agricultural customers. It is also used to recharge the local groundwater basin, as discussed in Section 6.2.2, and fill non-local groundwater storage in Kern County.

The following sections describe Zone 7's contract with DWR for SWP water and the types of water Zone 7 receives under this contract.

#### *6.2.1.2.1.1 Contract with DWR*

DWR provides water supply from the SWP to 29 SWP contractors, including Zone 7, in exchange for contractor payment of all costs associated with providing that supply. DWR and each of the contractors entered into substantially uniform long-term water supply SWP contracts in the 1960s with 75-year terms. The first set of contracts originally terminated in 2035, and most of the remaining contracts terminated within three years after that. Zone 7's original contract was executed in 1961 and was set to expire in 2036. Over the last few years, there have been several key amendments to the SWP contracts, including reaching an agreement in principle to extend SWP contracts, improve water management tools for SWP contractors, and participation in the Delta Conveyance Project. Details regarding Zone 7's contract with DWR are provided in Zone 7's 2020 UWMP.

#### *6.2.1.2.1.2 Table A Allocation*

Each SWP contractor is limited to a maximum annual contract amount as specified in Article 6(c) and Table A of the SWP Contract; this amount is therefore commonly referred to as "Table A." As noted above, Zone 7 first entered into the SWP Contract in November 1961; as the SWP was expanded and as Zone 7 demands increased over the years, Zone 7's Table A amount was increased, reaching the amount of 46,000 AFY in 1997. Since then, Zone 7 has increased its supply from the SWP through a series of five permanent transfers. In December 1999, Zone 7 secured Table A SWP allocations from Lost Hills Water District of 15,000 AFY and Berrenda Mesa Water District of 7,000 AFY. In December 2000, 10,000 AFY of SWP allocation from Belridge Water Storage District was acquired. An additional 2,219 AFY was obtained from the same source in October 2003. Finally, 400 AFY of water was acquired from the Tulare Lake Basin Water Storage District in 2003. Together, these transfers have raised Zone 7's current Table A allocation to 80,619 AFY.

In practice, the actual amount of SWP water available to Zone 7 under the Table A allocation process (presented as percent of Table A) varies from year to year due to hydrologic conditions, water demands of other contractors, existing SWP stored water, SWP facility capacity, and environmental/regulatory requirements. The Table A allocation is typically less than 100 percent of the Table A amount. SWP reliability is defined based on the long-term average Table A allocation. DWR prepares a biennial report to assist SWP contractors and local planners in assessing the availability of supplies from the SWP. DWR issued its most recent update, the Final 2019 State Water Project Delivery Capability Report (2019 DCR)[9], in August 2020. In this update, DWR provides SWP supply estimates for SWP contractors to use in planning efforts, including the 2020 UWMP. The 2019 DCR includes DWR's estimates of SWP water supply availability under both existing (2020) and future conditions (2040).

[9] Department of Water Resources, 2020. State Water Project Delivery Capability Report 2019. https://data.cnra.ca.gov/dataset/state-water-project-delivery-capability-report-dcr-2019/resource/119da5c5-1c47-4142-8896-334628ca61cd?inner_span=True

DWR's estimates of SWP deliveries are based on a computer model that simulates monthly operations of the SWP and Central Valley Project (CVP) systems. Key inputs to the model include system facilities, hydrologic inflows to the system, regulatory and operational constraints on system operations, and contractor demands for SWP water. In conducting its model studies, DWR must make assumptions regarding each of these key inputs.

In the 2019 DCR model for existing (2020) conditions, DWR assumed: existing facilities, hydrologic inflows to the model based on 82 years of historical inflows (1922 through 2003), current regulatory and operational constraints, and contractor demands at maximum Table A amounts. Note that the regulatory and operational constraints include the 2018 Coordinated Operations Agreement (COA) Amendment, 2019 Biological Opinions, and 2020 Incidental Take Permit. The 2018 COA Amendment lays out the terms under which the CVP operates with the SWP. The 2019 Biological Opinions for the Long-Term Operation of the CVP and SWP reflect the federal government's (U.S. Fish and Wildlife Service's) opinion as to whether or not the operation of the CVP and SWP is likely to jeopardize the continued existence of threatened and endangered species or result in the destruction or adverse modification of critical habitat. Finally, the 2020 Incidental Take Permit is a requirement for the SWP's California Endangered Species Act compliance with regards to state-protected longfin smelt and state- and federally-protected delta smelt, winter-run Chinook, and spring-run Chinook.

To evaluate SWP supply availability under future conditions, the 2019 DCR included a model study representing hydrologic and sea level rise conditions at 2040. The future condition study used all of the same model assumptions as the study under existing conditions but reflected changes expected to occur from climate change, specifically, projected temperature and precipitation changes centered around 2035 (2020 to 2049) and a 45 cm sea level rise.

For Zone 7's Table A supply, the 2019 DCR's existing condition was assumed to represent 2020 (59 percent of Table A reliability, 47,600 AFY)[10], and the future condition (54 percent of Table A reliability, 43,500 AFY)[10] was applied to 2040; the years in between were interpolated between these two bookends[11]. Note that the effect of the proposed Delta Conveyance Project on SWP water supply yield is still being analyzed and has not been included.

As a SWP contractor, Zone 7 has the option to store unused Table A water from one year to the next in the SWP's San Luis Reservoir, when there is storage capacity available. This "carryover" water is also called Article 12e or 56c water, in reference to the relevant contract terms. Article 12e water must be taken by March 31 of the following year, but Article 56c water may remain as carryover as long as San Luis Reservoir storage is available. The analysis in Zone 7's UWMP assumes Zone 7 carries over 10,000 AF of water each year on average.

#### *6.2.1.2.1.3 Article 21 Water (Interruptible or Surplus Water)*

Under Article 21 of Zone 7's SWP contract, Zone 7 also has access to excess water supply from the SWP that is available only if: 1) it does not interfere with SWP operations or Table A allocations, 2) excess water is available in the Delta, and 3) it will not be stored in the SWP system. As described in the 2019 DCR, Article 21 water deliveries are highly variable. This water becomes available during short time windows in

[10] Existing condition: Table A-4 of the Technical Addendum to the 2019 DCR. Future condition: Table B-6.

[11] For comparison, the Zone 7's 2015 UWMP assumed 62 percent of Table A reliability (50,000 AFY). The 2019 WSE Update assumed 49 percent of Table A reliability (39,500 AF). Table A allocations over the last ten years have ranged between 5 percent and 85 percent, with an average of 48 percent.

the wet season when there is excess water in the system (due to storms) that DWR cannot store in San Luis Reservoir. When Article 21 water becomes available, SWP contractors can request delivery, and the available water is distributed generally in proportion to the Table A contract amounts of those contractors requesting delivery. Delivery of Article 21 water requires accessible storage during very wet conditions and/or the ability to use the water directly without impacting Table A deliveries to Zone 7. Historically, these conditions have been difficult to meet for Zone 7 and have resulted in infrequent and low yields. Therefore, Zone 7 is not assuming any water supply yield from Article 21 at this time. As Zone 7 increases its local storage and ability to capture Article 21 water (e.g., via the Chain of Lakes project), Zone 7 will re-evaluate the potential increase in Article 21 yield.

#### *6.2.1.2.1.4 Article 56d Water (Turnback Pool Water)*

Article 56d is a contract provision that allows SWP contractors with unused Table A water to sell that water to other SWP contractors via a "turnback pool" administered by DWR on an annual basis. Historically, only a few SWP contractors have been able to make turnback pool water available for purchase, particularly in normal or dry years.

With the enhanced ability to directly transfer or exchange SWP water from one SWP contractor to another under the Water Management Tools contract amendment, it is expected that there will not be much water available under Article 56d in the future. Zone 7 is therefore assuming no supplies are available from this source under normal conditions.

#### *6.2.1.2.1.5 Yuba Accord*

In 2008, Zone 7 entered into a contract with DWR to purchase additional water under the Lower Yuba River Accord (Yuba Accord). The original contract expires in 2025, and several amendments have been made to the original agreement over the years, including a new pricing agreement executed in 2020.

There are four different types ("Components") of Yuba Accord water made available as a water purchase or transfer; Zone 7 has the option to purchase Components 1, 2, and 3 water during drought conditions, and Component 4 water when the Yuba County Water Agency has determined that it has water supply available to sell.

Water is primarily available during dry years under the Yuba Accord, and the amount is highly variable: 400 AF in 2014, approximately 300 AF in 2015, and 3,000 AF in 2020. For planning purposes, Zone 7 currently does not assume any water supply yield specifically from the Yuba Accord, although water transfers obtained by Zone 7 (see Section 6.2.7) could potentially include supplies from the Yuba Accord.

### 6.2.1.2.2 Local Surface Water Runoff

Zone 7, along with ACWD, has a water right (Permit 11319 [Application 17002]) to divert flows from Arroyo Valle. Runoff from the Arroyo Valle watershed above Lake Del Valle is stored in the lake, which is managed by DWR as part of the SWP. Lake Del Valle also stores imported surface water deliveries from the SWP and serves both a flood control function, as well as a recreational one. In late fall, DWR typically lowers lake levels in anticipation of runoff from winter storm events. Water supply in Lake Del Valle is made available to Zone 7 via the SBA through operating agreements with DWR. Inflows to Lake Del Valle, after accounting for permit conditions, are equally divided between ACWD and Zone 7 under their respective permits.

Zone 7's latest modeling forecasts future average yields from Arroyo Valle to Zone 7 at approximately 5,500 AFY, using historical hydrology adjusted for climate change impacts. Previous planning documents, including Zone 7's 2015 UWMP, assumed an average yield of 7,300 AFY, and the ten-year calendar year average (2011-2020) has been 3,500 AFY; local climate change effects on the watershed—specifically a net average reduction in precipitation—are expected to reduce the yield over time. Construction of the Chain of Lakes Arroyo Valle diversion structure and pipeline will allow Zone 7 to capture more of the storm releases from Lake Del Valle and likely increase the yield from this water supply in the future. The conservative average yield estimate of 5,500 AFY is consistent with the 2019 WSE Update; it will be re-evaluated as more climate change downscaled information is developed and as the Chain of Lakes projects progress.

#### 6.2.1.2.3 Local Storage

Zone 7 has two existing local storage options: Lake Del Valle and the Main Basin. Lake Del Valle stores both runoff from the Arroyo Valle watershed and imported surface water deliveries from the SWP. Zone 7 can store up to about 7,500 AF of its share of Arroyo Valle runoff in the lake; runoff collected in any given year is required to be delivered to Zone 7 by the end of the following year. The Main Basin is used conjunctively and is artificially recharged with SWP water. Zone 7 relies on the operational storage capacity of 126,000 AF in the Main Basin. Section 6.2.2.1 provides additional information on the Main Basin.

#### 6.2.1.2.4 Non-Local Storage

In addition to local storage, Zone 7 also participates in the two non-local (also called "out-of-basin") groundwater banking programs described below; both banks are located in Kern County. Note that while these banking programs provide a water source during drought years, they represent water previously stored from Zone 7's surface water supplies during wet years. Therefore, they do not have a net contribution to Zone 7's water supply over the long-term and in fact result in some operational losses as described below. While the out-of-basin groundwater banks significantly enhance system reliability, this banked water supply requires Banks Pumping Plant in the Delta and the SBA to be operational; low SWP Table A allocations (and generally low levels of water movement in the SWP system) can limit the delivery of these banked supplies via exchange. Figure 6-1 shows the historical operation of the Kern County banks—note the successful use of the groundwater banks to augment water supplies during the recent drought, and the recovery in the following years.

Point of Delivery Agreements with DWR and Kern County Water Agency, a SWP contractor, allow Zone 7 to store SWP water in and recover water from Semitropic Water Storage District (Semitropic) and Cawelo Water District (Cawelo). Semitropic and Cawelo are member units of Kern County Water Agency, which manages water deliveries to these agencies. Zone 7 has been storing water in the water banks operated by Semitropic since 1998 and by Cawelo since 2006. In November 2020, the Zone 7 Board of Directors (Zone 7 Board) authorized the execution of amendments to existing Point of Delivery Agreements that would extend water delivery terms for storage in Semitropic and Cawelo through 2030 and recovery of banked water through 2035.

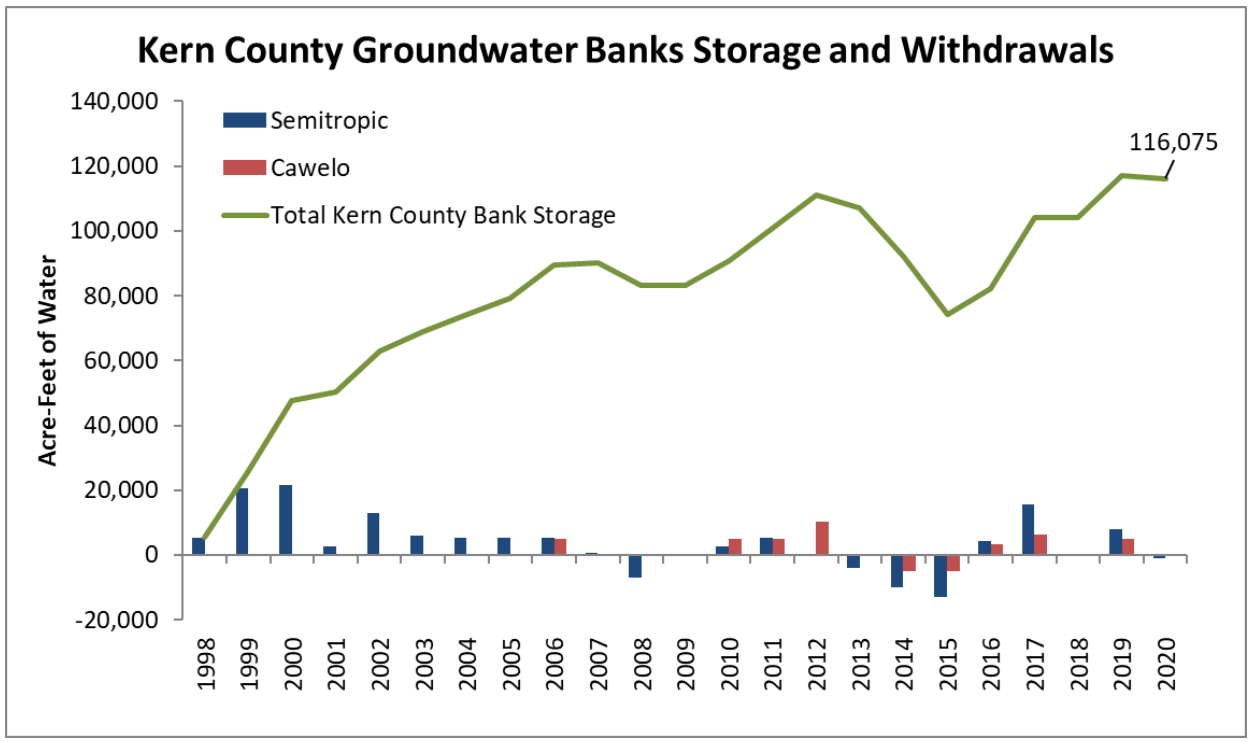


**Figure 6-1. Kern County Groundwater Banks Operations**

#### *6.2.1.2.4.1 Semitropic Water Storage District*

Zone 7 originally acquired a storage capacity of 65,000 AF in the Semitropic groundwater banking program in 1998. Subsequently, Zone 7 agreed to participate in Semitropic's Stored Water Recovery Unit, which increased pumpback capacity and allowed Zone 7 to contractually store an additional 13,000 AF. Zone 7 currently has a total of 78,000 AF of groundwater banking storage capacity available to augment water supplies during drought and emergency conditions and as needed. Zone 7 can store up to 5,883 AFY in the Semitropic groundwater bank. Note that a 10 percent loss is associated with water stored in Semitropic.

Under the contract terms, Zone 7 can request up to 9,100 AF of pumpback and up to 8,645 AF of exchange water. Pumpback is water that is pumped out of the Semitropic aquifer and into the SWP system. Exchange water is water that is transferred between Zone 7 and Semitropic by adjusting the amounts of Table A water delivered to Zone 7 and Semitropic; the availability of this type of water depends on the SWP allocation. During the recent drought, Zone 7 was able to recover 9,900 AF in 2014 and about 12,800 AF in 2015. Zone 7 has largely been storing water in Semitropic over the past few years but did recover 324 AF in 2016 and 1,000 AF in 2020.

#### *6.2.1.2.4.2 Cawelo Water District*

Similar to the arrangements with Semitropic, Zone 7 has 120,000 AF of groundwater banking storage capacity available with Cawelo, as executed in a 2006 agreement. Zone 7 can store up to 5,000 AFY in the bank and can request up to 10,000 AFY of pumpback (or SWP exchange water) from Cawelo. During the recent drought, Zone 7 was able to recover 10,000 AF, delivered evenly over 2014 and 2015. Most of this water was used directly, while the rest was stored in San Luis Reservoir for use the following year. Zone 7 only accumulates 50 percent of the water sent to storage in Cawelo; the other 50 percent goes towards water loss and compensation to Cawelo.

## 6.2.2 Groundwater

This section describes the Livermore Valley Groundwater Basin and Zone 7's Groundwater Management Plan[12], which is used to manage the basin. Each year, Zone 7 prepares an Annual Report for the Groundwater Management Program. A copy of the Executive Summary of the 2019 Water Year Annual Report is provided in Appendix H.

The City owns and operates three active groundwater wells in the Main Basin, which is a portion of the Livermore Valley Groundwater Basin. The City's groundwater resource is described below.

### *6.2.2.1 Groundwater Basin Description*

Zone 7 has managed local surface water and groundwater resources for beneficial uses in the Livermore Valley Groundwater Basin (Basin) for more than 50 years. Consistent with its management responsibilities, duties, and powers, Zone 7 is designated in the 2014 Sustainable Groundwater Management Act (SGMA) as the exclusive Groundwater Sustainability Agency (GSA) within its jurisdictional boundaries.

As defined in DWR Bulletin 118 Update 2003 (California's Groundwater), the Basin (DWR Basin 2-10, shown on Figure 6-2) covers 69,600 acres (109 square miles), extending from the Pleasanton Ridge east to the Altamont Hills and from the Livermore Uplands north to the Tassajara Uplands. The Basin is not adjudicated, and DWR has identified it as medium priority; Basin 2-10 is not identified as either in overdraft or expected to be in overdraft. Surface drainage features include Arroyo Valle, Arroyo Mocho, and Arroyo Las Positas as principal streams, with Alamo Creek, South San Ramon Creek and Tassajara Creek as minor streams. All streams converge on the west side of the basin to form Arroyo de la Laguna, which flows south and joins Alameda Creek in Sunol Valley and ultimately drains to the San Francisco Bay. Some geologic structures restrict the lateral movement of groundwater, but the general groundwater gradient is from east to west, towards Arroyo de la Laguna, and from north to south along South San Ramon Creek and Arroyo de la Laguna.

The entire floor of the Livermore Valley and portions of the upland areas on all sides of the valley overlie groundwater-bearing materials. The materials are mostly continental deposits from alluvial fans, outwash plains, and lakes. They include valley-fill materials, the Livermore Formation, and the Tassajara Formation. Under most conditions, the valley-fill and Livermore Formation yield adequate to large quantities of groundwater to all types of wells, with the larger supply wells being in the Main Basin. The Main Basin is composed of the Castle, Bernal, Amador, and Mocho II sub-basins, with an estimated total storage capacity of 254,000 AF.

[12] Jones & Stokes, 2005. Groundwater Management Plan for Livermore-Amador Valley Groundwater Basin. http://www.zone7water.com/index.php/36-public/content/79-groundwater-management-plan

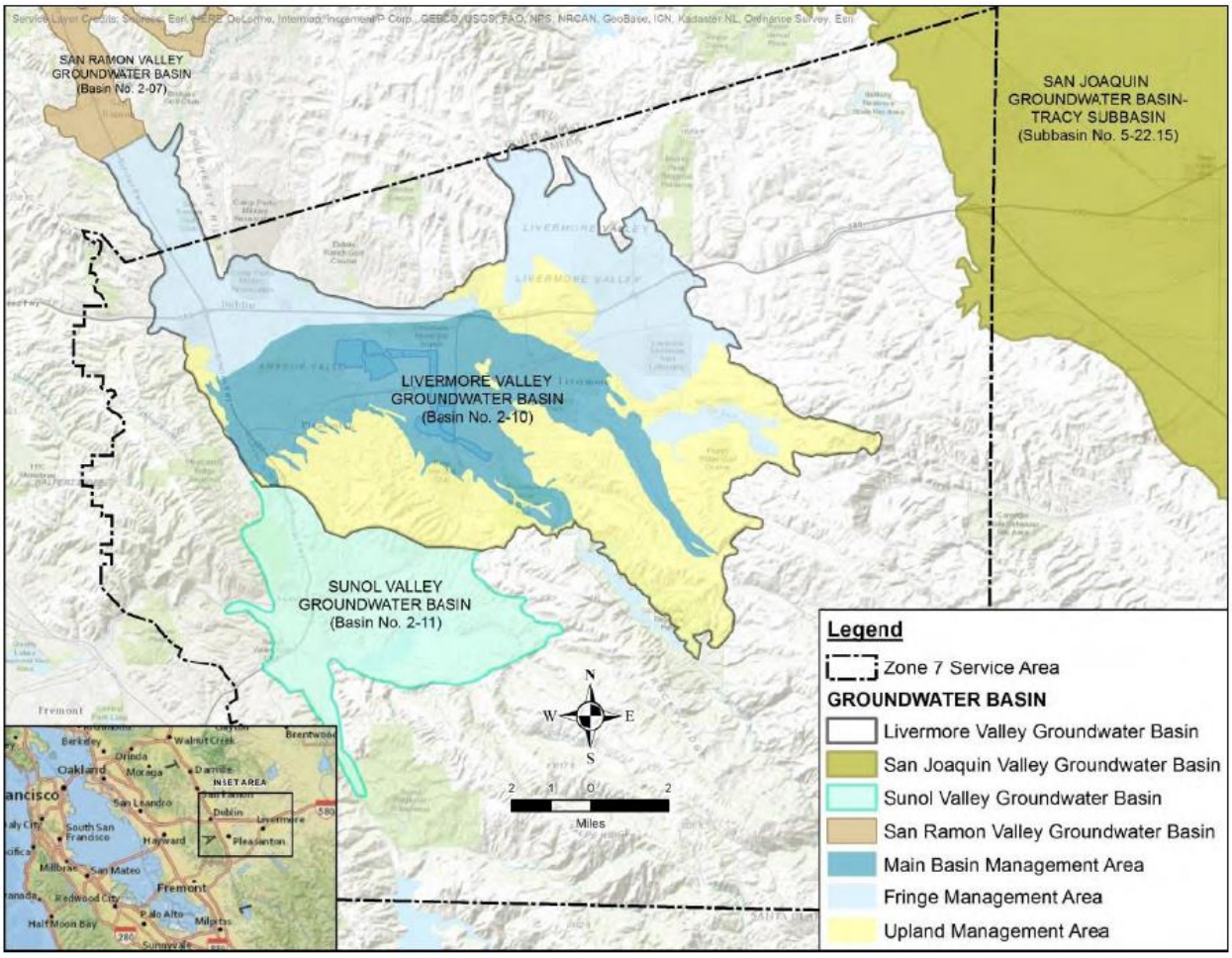


**Figure 6-2. Livermore Valley Groundwater Basin and Subbasins**

### *6.2.2.2 Groundwater Management*

Zone 7's GMP documented all of Zone 7's then-current groundwater management policies and programs and was developed to satisfy the requirements set forth in the California Groundwater Management Planning Act (Water Code Sections 10750, *et seq*.). More recently, a Salt and Nutrient Management Plan has been incorporated into the GMP. Zone 7 prepares annual reports that summarize the results of the groundwater monitoring, evaluation, and management efforts by water year; the most recent version of the annual report is for the 2019 water year (October 1, 2018 through September 30, 2019). In addition to the annual reports completed over the years, Zone 7 completed the Alternative Groundwater Sustainability Plan for the Livermore Valley Groundwater Basin (Alternative GSP) in 2016 as required under SGMA.

For Zone 7's operations, the Main Basin is considered a storage facility and not a long-term water supply, because Zone 7 does not have access to naturally recharged water ("sustainable yield"). Zone 7 only pumps groundwater that has been artificially recharged with surface water supplies. As part of this conjunctive use program, Zone 7's policy is to maintain groundwater levels above historic lows in the Main Basin to minimize the risk of inducing land subsidence. Currently, this is accomplished by releasing SWP water to the arroyos for percolation and replenishment of the aquifers and by managing pumping activities.

Zone 7 established historic lows based on the lowest measured groundwater elevations in various wells in the Main Basin. The difference between water surface elevations when the Main Basin is full and water surface elevations when the Main Basin is at historic lows defines Zone 7's operational storage. Of the estimated total storage capacity of 254,000 AF, operational storage is about 126,000 AF based on Zone 7's experience operating the Main Basin, with the remaining 128,000 AF considered emergency reserve storage.

#### 6.2.2.2.1 Groundwater Level Monitoring and Storage Estimates

Zone 7 routinely monitors groundwater levels within the Main Basin. Some of the data collected is submitted to DWR under the California Statewide Groundwater Elevation Monitoring (CASGEM) program. All the data is reflected in the annual reporting on the Groundwater Management Program.

Two independent methods are used to estimate groundwater storage: 1) Hydrologic Inventory, and 2) Nodal Groundwater Elevation. The Hydrologic Inventory method computes storage change each quarter from basin supply and demand data; this method can also be used to forecast future water storage conditions. The Nodal Groundwater Elevation method computes storage from hundreds of water level measurements. Zone 7 continues to refine the calculation methods; the average of the two results is generally used as the estimate of total groundwater storage volume.

Figure 6-3 depicts Main Basin storage levels calculated using the average of these two methods in thousand acre-feet (TAF). Note the declines in storage due to drought, particularly between 1987 and 1992 and more recently between 2012 and 2015. Stored groundwater at the end of the 2020 water year (October 1, 2019 through September 30, 2020) was approximately 240,000 AF, with 112,000 AF of groundwater available as operational storage.

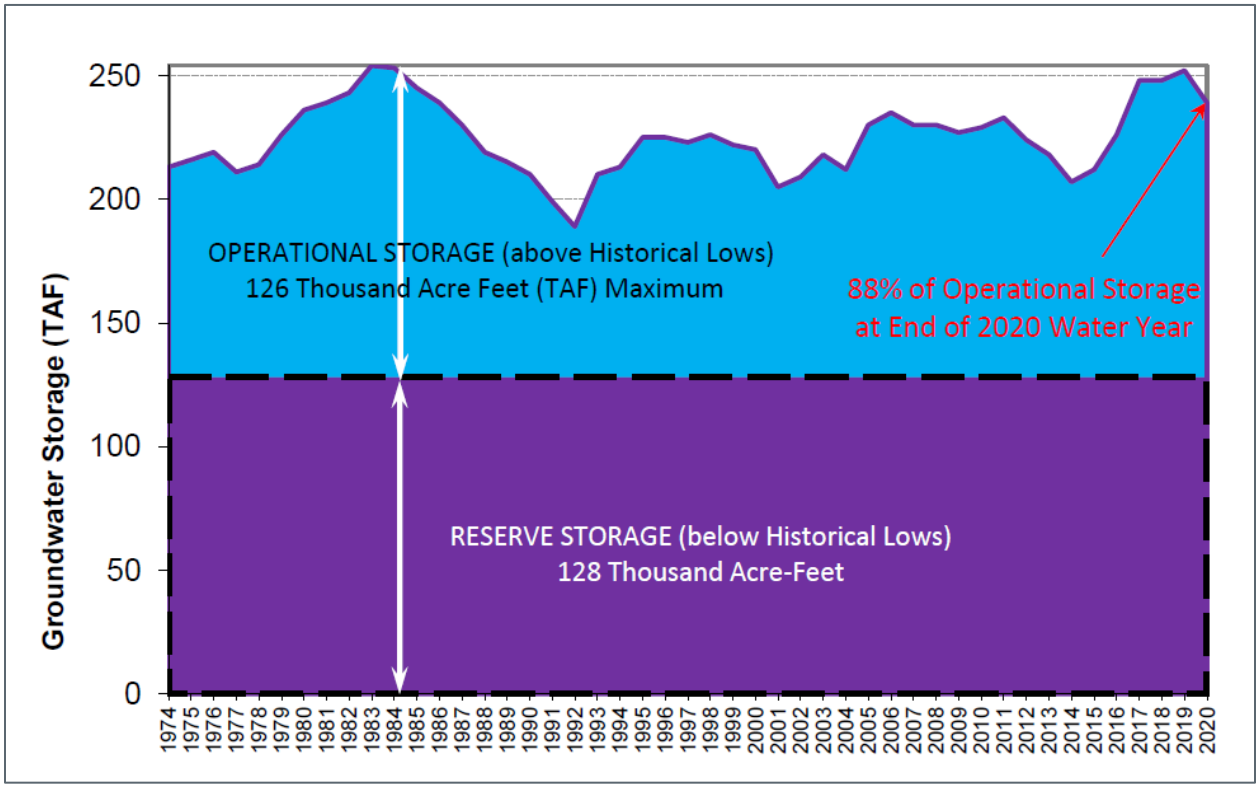


**Figure 6-3. Main Basin Groundwater Storage**

#### 6.2.2.2.2 Current Sustainable Yield and Groundwater Pumping Quotas

Long-term natural sustainable yield is contractually defined as the average amount of groundwater annually replenished by natural recharge in the Main Basin—through percolation of rainfall, natural stream flow, and irrigation waters, and inflow of subsurface waters—and which can therefore be pumped without lowering the long-term average groundwater volume in storage. In contrast, "artificial recharge" is the aquifer replenishment that occurs from artificially induced or enhanced stream flow. With artificial recharge, more groundwater can be sustainably extracted from the Main Basin each year. Zone 7 only uses groundwater that has been artificially recharged by Zone 7.

The natural sustainable yield of the Main Basin has been determined to be about 13,400 AFY, which is about 11 percent of the operational storage. This long-term natural sustainable yield is based on over a century of hydrologic records and projections of future recharge conditions.

Each Zone 7 retailer has an established GPQ, formerly referred to as the "Independent Quota" in the original Municipal and Industrial water supply contract between Zone 7 and each retailer. GPQs are 3,069 AFY for Cal Water, 645 AFY for DSRSD, and 3,500 AFY for the City. The City and Cal Water pump their own GPQ, while Zone 7 pumps DSRSD's GPQ. Livermore has not had any groundwater pumping capability for many years and has therefore not been using their GPQ. Averages are maintained by allowance of "carryover"—limited to 20 percent of the GPQ (i.e., 700 AFY for the City)—when less than the GPQ is used in a given year. A retailer must pay a "recharge fee" for all groundwater pumped exceeding their GPQ and any carryover. This practice helps avoid a repeat of historical over-drafting of the basin by the larger municipal users. The fee covers the cost of importing and recharging additional water into the Main Basin. The balance of the natural sustainable yield is pumped for other municipal, agricultural, and gravel mining uses.

Zone 7's groundwater extraction for its treated water system does not use the natural sustainable yield from the Main Basin; instead, Zone 7 pumps only water that has been recharged as part of its artificial recharge program using its available surface water supplies. During high demand periods, groundwater is used to supplement surface water supply delivered via the SBA. Groundwater is also used when the SBA is out of service due to maintenance and improvements or when Zone 7's surface water treatment plants are operating under reduced capacity due to construction, repairs, etc. Finally, Zone 7 taps into its stored groundwater under emergency or drought conditions, when there may be insufficient surface water supply available.

Zone 7 also pumps groundwater out of the Main Basin during normal water years to help reduce the salt loading in the Main Basin in accordance with the Salt Management Plan. The Mocho Groundwater Demineralization Plant (MGDP) has been in operation since 2009 to achieve additional salt removal. During emergency or drought conditions, MGDP operations may be reduced to maximize available water supply and avoid water loss due to brine disposal from the MGDP.

On average, Zone 7 plans to recharge about 9,200 AFY in the future, which means that Zone 7 can pump an equivalent 9,200 AFY from the Main Basin on average.

#### 6.2.2.2.3 Artificial Recharge and Groundwater Extraction by Zone 7

Before the construction of the SWP in the early 1960s, groundwater was the sole water source for the Livermore-Amador Valley. This resource has gone through several periods of extended withdrawal and subsequent recovery. The Main Basin was over drafted in the 1960s when approximately 110,000 AF of groundwater was extracted. The Main Basin was allowed to recover from 1962 to 1983. It was during this era that Zone 7 first conducted a program of groundwater replenishment by recharging imported surface

water via its streams or arroyos ("in-stream recharge" or "artificial recharge") for storage in the Main Basin, began supplying treated surface water to customers to augment groundwater supplies, and regulating municipal pumping by other users.

Figure 6-4 shows Zone 7's total annual artificial recharge amounts, pumping amounts, and their cumulative net impacts to operational storage from the 1974 water year to the 2020 water year. Zone 7's operational policy is to maintain the balance between the combination of natural and artificial recharge and withdrawal or pumping to maintain groundwater levels above the emergency reserve storage. Zone 7 has generally been able to pump as much groundwater as it has needed to over the last five years; however, during the recent drought, decreases in groundwater elevation did noticeably affect the production of certain wells. Zone 7 is continuing to study the groundwater basin and developing new tools (such as an improved groundwater model) to better understand the levels of groundwater extraction possible under various conditions and contributing factors such as groundwater connectivity, spatial distribution of groundwater in the Main Basin, and others.

Since 1974, Zone 7 has artificially recharged over 67,000 AF more water than it has pumped, helping to offset demands and keeping the Main Basin's groundwater levels above the historical lows. Between 1974 and 2007 Zone 7 had artificially recharged approximately 70,000 AF more than it had pumped during that same time; however, since 2007, Zone 7 has artificially recharged about 3,000 AF less than it has pumped, primarily due to construction work on the SBA, recent drought conditions, and lower-than-average SWP allocations over that same time period. Overall net groundwater storage remains significantly above historical lows, as shown on Figure 6-3.

Zone 7 plans to augment its current groundwater in-stream recharge capacity with off-stream recharge using the future Chain of Lakes.

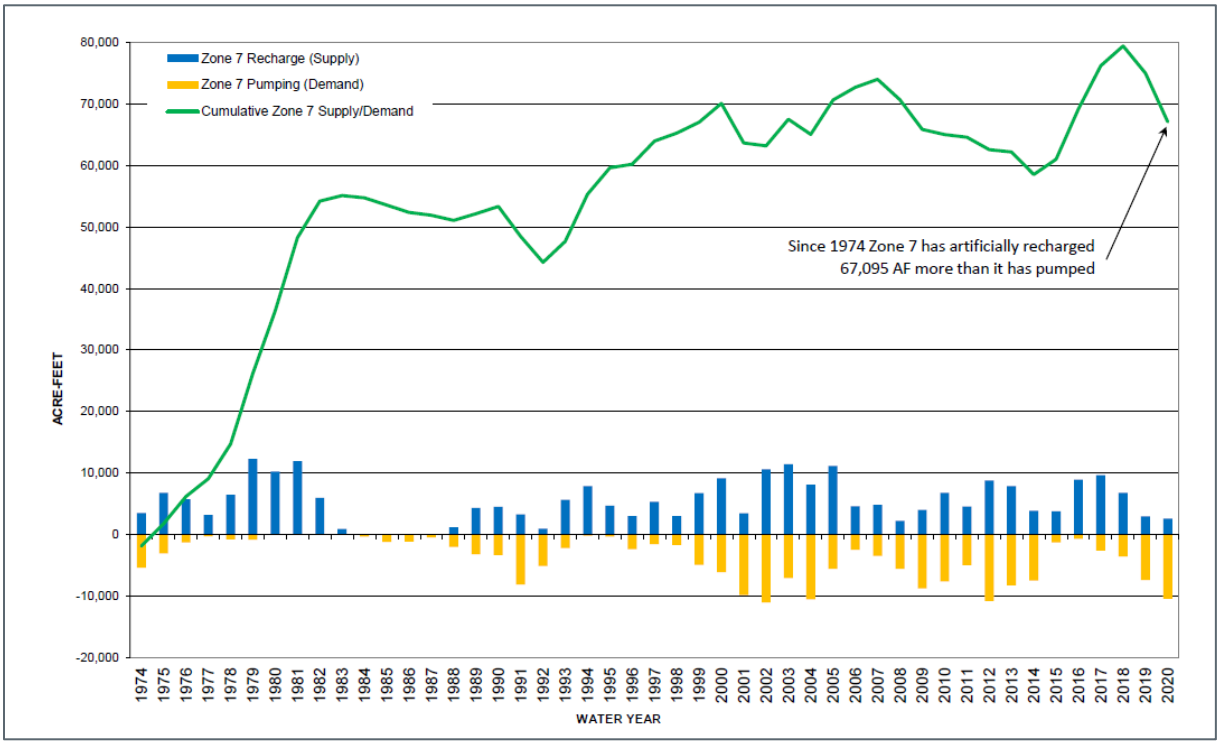


**Figure 6-4. Artificial Recharge, Pumping, and Net Cumulative Impacts to Operational Storage**

#### 6.2.2.2.4 Groundwater Quality Monitoring and Protection

In general, the Main Basin contains good-quality groundwater that meets all state and federal drinking water standards; groundwater is chloraminated to match the disinfectant residual in the transmission system. Zone 7 has several groundwater wells with naturally-occurring hexavalent chromium (Cr(VI)) concentrations near the Maximum Contaminant Level (MCL) and polyfluoroalkyl substances (PFAS) above the notification limit. In response, Zone 7 is actively managing flows from the affected wells. For example, Cr(VI) levels at the Stoneridge well is being managed through system blending and/or blending with other wells. Also, the PFAS levels in the Mocho 2 well currently require blending with the other wells in that wellfield and/or being sent through the MGDP. These conditions are being monitored and may change in the future.

Over the last few decades, there has been a slow degradation of groundwater quality as evidenced by rising total dissolved solids (TDS) and hardness levels. To address this problem, Zone 7 developed a Salt Management Plan[13] (SMP), which was approved by the Regional Water Quality Control Board (RWQCB) in 2004, satisfying a condition of the Master Water Recycling Permit. The SMP was incorporated into Zone 7's GMP in 2005. Salinity levels are being addressed primarily through groundwater pumping and demineralization[14]. Zone 7 completed construction of the 6.1-MGD MGDP in 2009 in the Mocho wellfield. The facility simultaneously allows for the removal and export of concentrated minerals or salts from the Main Basin and the delivery of treated water with reduced TDS and hardness levels to Zone 7's customers. Table 6-1 lists the average TDS and hardness for each year from 2016 through 2020.

**Table 6-1. Groundwater Quality: TDS and Hardness (2016-2020)**

| Year | Total Dissolved Solids (TDS), mg/L | Hardness, mg/L |
|---|---|---|
| 2016 | 685 | 416 |
| 2017 | 673 | 395 |
| 2018 | 673 | 409 |
| 2019 | 687 | 417 |
| 2020 | 683 | 433 |

Zone 7 implements a wastewater and recycled water monitoring program as part of the GMP. In the 2020 water year, about 14 percent (1,036 AF) of the recycled water produced in the Tri-Valley area was applied to landscapes over the Main Basin; the remainder was applied on areas outside of the Main Basin, primarily on areas overlying the Dublin and Camp fringe basins and the Tassajara uplands. There is also a small amount of untreated wastewater (681 AF in the 2020 water year) that is discharged to the Main Basin as leachate from wastewater treatment ponds located in southern Livermore, from onsite domestic wastewater systems (septic systems), and from leaking wastewater and recycled water pipelines that run throughout the Basin.

[13] Zone 7 Water Agency, 2004. Salt Management Plan. http://www.zone7water.com/publications-reports/reports-planning-documents/158-salt-management-plan-2004

[14] The brine concentrate resulting from the treatment system is exported to the San Francisco Bay via a regional wastewater export pipeline.

Nitrates and salinity have historically been the primary water quality constituents-of-concern in wastewater and recycled water, but nitrates have become less of a concern since 1995, when the LWRP and DSRSD's RWTF, two wastewater treatment facilities in the area feeding into recycled water facilities, reduced nitrates in their effluent. Salinity is addressed by the SMP, as discussed above. In 2015, Zone 7 completed a Nutrient Management Plan (NMP)[15], which provides an assessment of the existing and future groundwater nutrient concentrations relative to the current and planned expansion of recycled water projects and future development in the Livermore Valley. The NMP also presents planned actions for addressing positive nutrient loads and high groundwater nitrate concentrations in localized Areas of Concern where the use of septic systems is the predominant method for sewage disposal. The NMP was prepared as a supplement to the SMP; together, they are a Salt and Nutrient Management Plan, which has been incorporated into the GMP and Alternative GSP.

Under the Toxic Sites Surveillance Program, Zone 7 documents and tracks polluted sites across the groundwater basin that pose a potential threat to drinking water and interfaces with lead agencies to ensure that the Main Basin is protected. Information is gathered from state, county, and local agencies, as well as from Zone 7's well permitting program and the SWRCB's GeoTracker website and compiled in a GIS database. In general, there are two types of spills potentially threatening the Livermore Valley Groundwater Basin: petroleum-based fuel products and industrial chemical contaminants. In the 2020 water year, Zone 7 tracked the progress of 56 active sites where contamination has been detected in groundwater or is threatening groundwater. More details on the affected sites and their remediation can be found in the annual report.[16]

#### 6.2.2.2.5 Land Surface Elevation Monitoring Program

Previously, Zone 7's Land Surface Elevation Monitoring Program involved contracting with a licensed land surveyor to measure land surface elevations within the Main Basin boundary twice per year. The program included a network of approximately 40 elevation benchmarks encompassing Zone 7's production wellfields and spanning the Bernal and Amador Subareas within the Main Basin.

In the 2016 water year, Zone 7 contracted with TRE Altamira (TRE) to evaluate Interferometric Synthetic Aperture Radar (InSAR) as an alternative to land surveying for subsidence monitoring. TRE analyzed InSAR data from three different satellites over a 24-year period (from 1992 to 2016) which included approximately 120 satellite images with between 415 and 1,202 measuring points per square mile. Each measuring point contains a deformation time series, including cumulative displacement, average deformation rate, acceleration, and seasonal amplitude. The study results correlated well with topographic surface measurements taken by land surveys within the same time period. An added benefit of the InSAR dataset was that it included a larger area (i.e., the entire Main Basin) than the land surveying.

Starting in the 2019 water year, Zone 7 retired the land surveying program and transitioned to InSAR for monitoring land subsidence. In general, observed land surface elevation changes between September 2018

[15] Zone 7 Water Agency, 2015. Nutrient Management Plan – Livermore Valley Groundwater Basin.
http://www.zone7water.com/images/pdf_docs/groundwater/nmp-2015_final.pdf

[16] Zone 7 Water Agency, 2020. Annual Report for the Sustainable Groundwater Management Program, 2019 Water Year (October 2018-2019), Livermore Valley Groundwater Basin.
https://www.zone7water.com/36-public/content/76-groundwater-management-program-annual-report

to September 2019 near Zone 7's municipal wells were within the range Zone 7 considers to be "elastic deformation" (i.e., rebound to their original location when groundwater levels return to previous levels).

#### 6.2.2.3 Historical and Projected Groundwater Use

As described above, the City has a GPQ of 3,500 AFY in the Main Basin. Historical groundwater pumpage from 2016 through 2020 is shown in Table 6-2. The City expects to pump 3,500 AFY on average in the future.

**Table 6-2. Groundwater Volume Pumped (DWR Table 6-1 Retail)**

| | |
|---|---|
| ☐ | Supplier does not pump groundwater.<br>The supplier will not complete the table below. |
| ☐ | All or part of the groundwater described below is desalinated. |

| Groundwater Type<br>***Drop Down List***<br>*May use each category multiple times* | Location or Basin Name | 2016* | 2017* | 2018* | 2019* | 2020* |
|---|---|---|---|---|---|---|
| Alluvial Basin | Livermore Valley Groundwater Basin | 3,426 | 4,541 | 3,499 | 3,549 | 3,027 |
| | **TOTAL** | 3,426 | 4,541 | 3,499 | 3,549 | 3,027 |

**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: Volumes are in AF.

## 6.2.3 Surface Water

As described in Section 6.2.1, the City receives treated surface water from Zone 7, whose supplies include imported surface water from the SWP and local surface water captured in the Del Valle Reservoir.

## 6.2.4 Stormwater

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 stormwater recovery systems.

## 6.2.5 Wastewater and Recycled Water

DSRSD is responsible for treating and discharging treated wastewater for the Cities of Dublin, South San Ramon, and the City. In addition, DSRSD owns and operates a water recycling plant at the RWTF and participates with EBMUD in a joint powers authority (DSRSD-EBMUD Recycled Water Authority, or DERWA) that operates the San Ramon Valley Recycled Water Program (SRVRWP). The SRVRWP provides recycled water that meets Title 22 disinfected tertiary recycled water requirements to landscape irrigation customers of DSRSD and EBMUD (including the City of San Ramon, City of Dublin, Dougherty Valley, Town of Danville, and Town of Blackhawk areas of Alameda and Contra Costa counties). The City began using recycled water from DERWA facilities in 2014 and will continue to expand use in the future.

Wastewater produced from the City's Ruby Hills housing development is sent to the LWRP. The City receives recycled water from Livermore for landscape irrigation servicing new development in the eastern portion of the City, referred to as the Staples Ranch region, which terminates at El Charro Road.

#### *6.2.5.1 Recycled Water Coordination*

In the early 1990s, DSRSD, Livermore, and Zone 7 undertook a Tri-Valley recycled water study and conducted a series of public workshops as a part of that process. As a result of that effort, the SWRCB issued a Master Water Recycling Permit (Order No. 93-159) to the three agencies in December 1993. The permit established the requirements for recycled water irrigation, groundwater recharge, and other Title 22-approved projects.

Zone 7 reviews DSRSD's recycled water plans from two perspectives—water supply management and groundwater protection. Recycled water is tertiary treated wastewater and is a very reliable supply; however, the use of recycled water was discouraged in the past due to the potential of salt buildup in the Main Basin. Developed in 2004, Zone 7's SMP identified demineralization with export of the brine stream as the best means of mitigating salt loading in the Main Basin. The SWRCB's 2009 Recycled Water Policy required the development of a Nutrient Management Plan, which Zone 7 completed in 2015. Zone 7 has incorporated a Salt and Nutrient Management Plan into the Groundwater Management Plan originally developed in September 2005.

The City does not produce recycled water. It purchases tertiary, disinfected recycled water produced at DSRSD's RWTF and the LWRP. These two recycled water sources are described below.

##### 6.2.5.1.1 DSRSD-EBMUD Recycled Water Authority (DERWA)

Currently, wastewater from Dublin, the City, and the southern portion of San Ramon are treated at DSRSD's RWTF. A portion of the secondary effluent is routed to DSRSD's water recycling plant for tertiary treatment and distribution through DERWA facilities. DSRSD coordinates with the planning departments in the cities of Dublin and San Ramon, Alameda and Contra Costa counties, and the U.S. Army Reserve to ensure that recycled water is used where it is available. DSRSD and EBMUD work together to manage recycled water supply demands.

The City and DSRSD each own 8.5 million gallons per day (MGD) of secondary treatment capacity at the DSRSD RWTF. The City maintains the first right to use the secondary effluent produced from wastewater originating from the City's wastewater collection system for recycling. DSRSD maintains the first right to use secondary effluent produced from the DSRSD collection system for recycling. According to the 2003 DERWA Water Sales Agreement, all recycled water produced by DSRSD is delivered to DERWA for subsequent wheeling to the EBMUD and DSRSD water service areas. DSRSD's tertiary treatment capacity is 16.2 MGD. Recycled water is delivered by DERWA on a first come first serve basis.

DSRSD monitors recycled water uses and files reports with the SWRCB Division of Drinking Water and the San Francisco Bay RWQCB, in conformance with DSRSD's General Water Reuse Order No. WQ 2016-0068-DDW (General Order 2016).

The DERWA recycled water system has three components owned by three different agencies:

- DERWA owns the Pump Stations R1 (at the RWTF), R200B, and R200A, as well as Reservoirs R100 and R200.

- EBMUD owns and operates the recycled water distribution pipeline system contained within its service area and will have two pump stations and a reservoir (future facilities).
- DSRSD owns and operates the recycled water treatment facilities at its wastewater treatment plant that treat wastewater from Dublin, South San Ramon and the City, and the recycled water distribution pipeline system within its service area, along with three pump stations, R300A, R300B, and R20, and two reservoirs, R20 and R300.

The City connects to the DERWA system near the corner of the DSRSD Dedicated Land Disposal site, adjacent to Stoneridge Drive near the DSRSD RWTF.

#### 6.2.5.1.2 Livermore Water Reclamation Plant

The LWRP can produce up to 6.0 MGD, or approximately 18 AF per day of recycled water. In 2020, the LWRP produced approximately 2,470 AF of recycled water, with 2,180 AF used within the Livermore Municipal Service Area.

### *6.2.5.2 Wastewater Collection, Treatment, and Disposal*

DSRSD's RWTF and the LWRP both provide wastewater collection and treatment services for the City's service area. Treated wastewater from both facilities are sent through the Livermore Amador Valley Water Management Agency (LAVWMA) pipeline for ultimate disposal by the East Bay Dischargers Authority (EBDA) in the San Francisco Bay.

The wastewater collection and treatment systems at DSRSD's RWTF and the LWRP are described below.

#### 6.2.5.2.1 DSRSD's Regional Wastewater Treatment Facility (RWTF)

DSRSD owns and operates the RWTF, which treats wastewater from Dublin, South San Ramon, and the City. The RWTF includes conventional secondary treatment facilities, as well as tertiary and advanced recycled water treatment facilities. Conventional secondary wastewater treatment facilities include primary sedimentation, activated sludge secondary treatment, secondary sedimentation, chlorine disinfection, and effluent pumping. The secondary treatment facilities currently have an ADWF capacity of 17.0 MGD. At projected buildout, the secondary facilities will have an ADWF capacity of 20.7 MGD; 10.4 MGD of this influent is projected to originate from the DSRSD service area. The remaining 10.3 MGD of influent is projected to originate from the City. DSRSD treats City influent by contract.

At DSRSD's RWTF, a portion of the secondary effluent is treated further to produce Title 22 disinfected tertiary recycled water. During the dry season when recycled water demands are high, recycled water is produced using sand filtration and ultraviolet disinfection facilities (SFUV), which have a treatment capacity of 16.2 MGD.

DSRSD's RWTF also includes microfiltration and ultraviolet disinfection facilities (MFUV) with a treatment capacity of 3.0 MGD. These facilities currently act as backup facilities for the SFUV facilities and are used during times of low and high demands. The SFUV facilities have less flexible startup and shutdown requirements, whereas the MFUV facilities have a wide turndown range; therefore, they are used during low flow periods. During high demand periods, the SFUV facilities are used, with the MFUV facilities serving as backup when units in the SFUV facilities are undergoing maintenance, repair, or replacement.

DSRSD's MFUV facilities were designed to produce recycled water suitable for both non-potable reuse and groundwater recharge, a potential future use that would replenish and improve local groundwater

quality. MFUV construction was completed in 1999. The MFUV project is currently producing recycled water that meets California Title 22 requirements for unrestricted reuse and received approval for groundwater recharge from the California Department of Public Health, which has transitioned to the SWRCB Division of Drinking Water, and RWQCB. As described further in Section 6.2.8, potable reuse projects remain a potential option for the Tri-Valley. Zone 7 and the other retailers will be studying this option. The City has currently elected not to participate in studying potable reuse.

Wastewater that is not recycled is discharged into the San Francisco Bay through a pipeline owned by LAVWMA, a joint powers agency created in 1974 by DSRSD, Livermore, and the City. Operations began in September 1979, with an expansion in 2005, for a current design capacity of 41.2 MGD. The wastewater is conveyed via a 16-mile pipeline from the City to San Leandro and enters the EBDA system for dechlorination and discharge through a deepwater outfall to the San Francisco Bay.

#### 6.2.5.2.2 Livermore Water Reclamation Plant

Livermore owns and operates the LWRP, which treats wastewater collected from Livermore, Lawrence Livermore National Laboratory, and the City's Ruby Hills housing development. From 2018 to 2020, the LWRP received an average daily dry weather flow of approximately 5.4 MGD. Wastewater is treated using conventional primary and secondary wastewater treatment processes, as well as tertiary treatment to produce recycled water.

The conventional wastewater treatment processes at the LWRP consist of the following:

- Primary sedimentation where heavy organic solids are removed from the raw sewage and sent to solids stabilization and dewatering facilities
- Secondary treatment utilizing the activated sludge process, which removes 85 to 95 percent of the remaining organic material after primary sedimentation
- Disinfection using sodium hypochlorite to reduce the bacteria levels in the secondary effluent prior to disposal
- Disposal of secondary effluent through the LAVWMA pipeline
- Solids stabilization using anaerobic digestion followed by belt pressing for dewatering prior to beneficial reuse as alternate daily cover or land application

Tertiary treatment for water reclamation consists of the following:

- Mono-media filters, where 95 to 99 percent of suspended material is removed from secondary effluent
- Disinfection using ultraviolet light (UV) prior to disposal

The tertiary treated effluent that satisfies California Title 22 requirements for unrestricted water reuse is recycled through landscape irrigation. From 2018 to 2020, 2.0 MGD was recycled on average. While the tertiary filtration capacity of the LWRP is approximately 10 MGD, the overall recycled water production capacity is limited by the UV disinfection capacity to 6 MGD.

#### 6.2.5.2.3 Wastewater Treatment and Discharge Within Service Area

Table 6-3 summarizes wastewater collected within the City's service area in 2020. This includes wastewater sent to the RWTF and the LWRP.

**Table 6-3. Wastewater Collected Within Area in 2020 (DWR Table 6-2 Retail)**

| | |
|---|---|
| ☐ | There is no wastewater collection system. The supplier will not complete the table below. |
| | Percentage of 2020 service area covered by wastewater collection system *(optional)* |
| | Percentage of 2020 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? *Drop Down List* | Volume of Wastewater Collected from UWMP Service Area 2020 * | Name of Wastewater Treatment Agency Receiving Collected Wastewater | Treatment Plant Name | Is WWTP Located Within UWMP Area? *Drop Down List* | Is WWTP Operation Contracted to a Third Party? *(optional)* *Drop Down List* |
| City of Pleasanton | Metered | 7,061 | DSRSD | DSRSD RWTF | Yes | No |
| City of Pleasanton (Ruby Hills Development) | Estimated | 280 | City of Livermore | LWRP | No | No |
| **Total Wastewater Collected from Service Area in 2020:** | | 7,341 | | | | |

**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3* **.**

NOTES: Volumes are in AF.

DSRSD's RWTF is located in the City's water service area. Therefore, the wastewater treated within the City's service area in 2020 includes wastewater that originated in the City of Dublin, South San Ramon, and the City. Table 6-4 identifies these volumes, as well as the recycled water from DSRSD's RWTF used within the City's service area. This includes recycled water delivered to the City's distribution system and recycled water used for landscape irrigation at DSRSD's RWTF, which is in the City's service area. The LWRP is not located within the City's service area and is therefore not included in Table 6-4. However, the City received approximately 98 AF of recycled water supplies from the LWRP in 2020.

**Table 6-4. Wastewater Treatment and Discharge Within Service Area in 2020 (DWR Table 6-3 Retail)**

| | |
|---|---|
| ☐ | **No wastewater is treated or disposed of within the UWMP service area.** The supplier will not complete the table below. |

| Wastewater Treatment Plant Name | Discharge Location Name or Identifier | Discharge Location Description | Wastewater Discharge ID Number *(optional)* [2] | Method of Disposal *Drop down list* | Does This Plant Treat Wastewater Generated Outside the Service Area? *Drop down list* | Treatment Level *Drop down list* | 2020 volumes [1] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Wastewater Treated | Discharged Treated Wastewater | Recycled Within Service Area | Recycled Outside of Service Area | Instream Flow Permit Requirement |
| DSRSD RWTF | LAVWMA and EBDA | Deepwater outfall to San Francisco Bay | | Bay or estuary outfall | Yes | Tertiary | 11,555 | 6,423 | 1,130 | 4,002 | 0 |
| | | | | | | **Total** | 11,555 | 6,423 | 1,130 | 4,002 | 0 |

[1] **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.
[2] If the **Wastewater Discharge ID Number** is not available to the UWMP preparer, access the SWRCB CIWQS regulated facility website at https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=RegulatedFacility

NOTES: Volumes are in AF. Discharged treated wastewater equals the wastewater treated (i.e., RWTF influent) minus the total volume recycled (i.e., within service area and outside service area). The volume recycled within the service area includes landscape irrigation at the DSRSD RWTF. The Livermore Water Reclamation Plant (LWRP) is not located within the City's service area and therefore not included in this table. However, approximately 98 AF of the City's 2020 recycled water supplies came from the LWRP.

### *6.2.5.3 Recycled Water System Description*

The City began constructing its recycled water system in June 2015 to serve landscapes irrigated with potable water.

The City's recycled water system includes approximately 51,500 LF of new recycled water pipeline, ranging in diameter from 6 inches to 20 inches, and approximately 22,400 LF of existing potable water pipelines repurposed into the recycled water system. This recycled water infrastructure is shown on Figure 6-5 and connects to DSRSD's RWTF and the City's existing 8 million gallon (MG) recycled water reservoir (Tassajara Reservoir), which was converted from a potable water storage facility in 2017.

The City's recycled water system is projected to serve a total of 99 permitted recycled water irrigation use sites (158 metered connections) once all customers have been connected to the system. An estimated 1,800 AFY of recycled water will be supplied to current and future irrigation customers, including City parks, schools, commercial property landscaping, streetscapes, and multi-family residential common areas. This supply will offset both potable water purchased from Zone 7 and local groundwater supplies.

The City's certified cross-connection specialist continues to work with the future customers along existing infrastructure in preparation for conversion to the recycled water system.

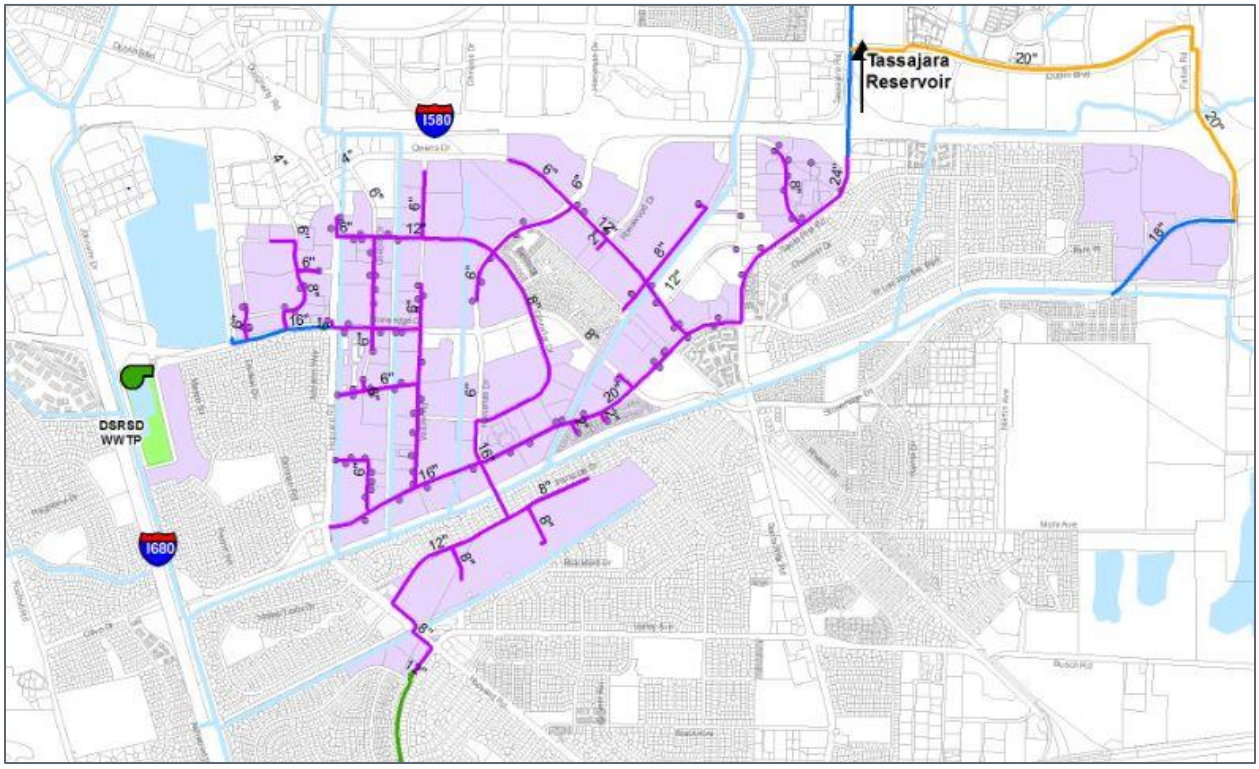


**Figure 6-5. City of Pleasanton Recycled Water System**

### 6.2.5.4 Potential, Current, and Projected Recycled Water Uses

Recycled water improves water supply reliability, preserves potable water supplies, and reduces wastewater discharges. The City's recycled water users were originally serviced under the authority of DSRSD or Livermore's General Order 96-011. In April 2020, the City, Livermore, and DSRSD transitioned from Regional Water Quality Control Board (San Francisco Bay Region) General Order 96-011 to SWRCB General Order 2016. The City currently permits the following recycled water uses:

- Landscape irrigation to designated irrigation meters
- Construction water, dust control, and surface washing
- Dual plumbing

In 2020, the City had a total of 89 permitted recycled water irrigation sites, one permitted dual plumbing site, and one site permitted for construction use (dust control/soil compaction). No permits have been issued that include impoundments. Five new recycled water users received permits in 2020; all were for landscape irrigation. In 2020, these customers used approximately 1,224 AF of recycled water combined, with nearly all consisting of landscape irrigation. Approximately 1.2 AF of recycled water was used for dual plumbing, and none was used for dust control or soil compaction.

Table 6-5 summarizes the amount of recycled water being used in 2020 for each direct beneficial use, as well as projected future volumes and uses. Approximately 1,300 AF of projected recycled water demands are estimated to replace current potable landscape demands. The actual and projected recycled water uses do not include recycled water system losses.

The 2020 projected estimates of recycled water use from the City's 2015 UWMP is compared to the actual 2020 recycled water use in Table 6-6.

Optimizing the use of recycled water is an important part of a reliable long-term irrigation supply for the City, which has the political support from City Council and City Management for implementing a robust recycled water program. Chapter 14.20 of the Pleasanton Municipal Code established a policy requiring irrigation customers directly along the recycled water distribution system to convert/connect to recycled water service consistent with all applicable legal requirements, except for specific defined exemptions. The major obstacle for the remaining identified customers that have yet to convert to recycled water is the cost to upgrade existing irrigation systems to pass required regulations.

The City has utilized incentives to assist customers with converting to recycled water, including setting its recycled water rate at 90 percent of its potable water rate (see Chapter 9). This financial incentive will likely provide adequate stimulus to encourage irrigation customers within the recycled water service area to use recycled water over potable water. Additionally, the connection fee to service new irrigation accounts is lower for recycled water than potable water. All irrigation meters (i.e., meters that service strictly landscape irrigation) servicing City-owned properties within the recycled water distribution area have been converted to recycled water.

The City's ongoing actions to encourage the use of recycled water are summarized in Table 6-7.

## Table 6-5. Recycled Water Direct Beneficial Uses Within Service Area (DWR Table 6-4 Retail)

| Beneficial Use Type<br>*Insert additional rows if needed.* | **Potential** Beneficial Uses of Recycled Water (Describe) | Amount of **Potential** Uses of Recycled Water (Quantity)<br>*Include volume units* [1] | General Description of 2020 Uses | Level of Treatment<br>*Drop down list* | 2020 [1] | 2025 [1] | 2030 [1] | 2035 [1] | 2040 [1] | 2045 [1] (opt) |
|---|---|---|---|---|---|---|---|---|---|---|
| Agricultural irrigation | | | | | | | | | | |
| Landscape irrigation (exc golf courses) | | | | Tertiary | 1,227 | 1,500 | 1,650 | 1,650 | 1,800 | 1,800 |
| Golf course irrigation | | | | | | | | | | |
| Commercial use | | | | | | | | | | |
| Industrial use | | | | | | | | | | |
| Geothermal and other energy production | | | | | | | | | | |
| Seawater intrusion barrier | | | | | | | | | | |
| Recreational impoundment | | | | | | | | | | |
| Wetlands or wildlife habitat | | | | | | | | | | |
| Groundwater recharge (IPR) | | | | | | | | | | |
| Reservoir water augmentation (IPR) | | | | | | | | | | |
| Direct potable reuse | | | | | | | | | | |
| Other (Description Required) | | | Dual Plumbing | Tertiary | 1 | | | | | |
| | | | | **Total:** | 1,228 | 1,500 | 1,650 | 1,650 | 1,800 | 1,800 |
| | | | | **2020 Internal Reuse** | 153 | | | | | |

NOTES: [1]Volumes are in AF. Recycled water system losses are not included. 2020 Internal Use is process water use at DSRSD RWTF. Landscape irrigation includes approximately 3 AF of use at the DSRSD RWTF.

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

| ☐ | Recycled water was not used in 2015 nor projected for use in 2020. The supplier will not complete the table below. If recycled water was not used in 2020, and was not predicted to be in 2015, then check the box and do not complete the table. | |
|---|---|---|
| **Beneficial Use Type** | **2015 Projection for 2020 [1]** | **2020 Actual Use [1]** |
| Agricultural irrigation | | |
| Landscape irrigation (exc golf courses) | 1,679 | 1,227 |
| Golf course irrigation | | |
| Commercial use | | |
| Industrial use | | |
| Geothermal and other energy production | | |
| Seawater intrusion barrier | | |
| Recreational impoundment | | |
| Wetlands or wildlife habitat | | |
| Groundwater recharge (IPR) | | |
| Reservoir water augmentation (IPR) | | |
| Direct potable reuse | | |
| Other (Construction) | 121 | 0 |
| Other (Dual Plumbing) | 0 | 1 |
| **Total** | 1,800 | 1,228 |
| [1] **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3. | | |
| NOTE: Volumes are in AF. 2020 landscape irrigation includes approximately 3 AF of use at the DSRSD RWTF. | | |

**Table 6-7. Methods to Expand Future Recycled Water Use (DWR Table 6-6 Retail)**

| ☐ | Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation. | | |
|---|---|---|---|
| | Provide page location of narrative in UWMP | | |
| Name of Action | Description | Planned Implementation Year | Expected Increase in Recycled Water Use * |
| Financial incentives | Price recycled water at reduced potable rates; Reduced connection fees for new recycled water meters | (see Note) | 573 |
| Conditional Requirements for Development Projects | All landscape irrigation meters will be converted to recycled water along recycled water distribution system | (see Note) | 0 |
| | | **Total** | 573 |
| ***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.* | | | |
| NOTES: Volumes are in AF. Actions were first implemented in 2015 and continue to be implemented. The expected increase in recycled water for all actions is included in the "Financial incentives" total. | | | |

## 6.2.6 Desalinated Water

Due to infeasibility, the City does not independently consider the development of a desalinated water system as a source of water within the planning horizon. This includes ocean water, brackish water, and groundwater desalination (though Zone 7 desalinates a portion of its groundwater). However, desalination has been identified as a potentially viable water source for several Bay Area water suppliers, including Zone 7. The Bay Area Regional Desalination Project (BARDP) is detailed in Section 6.2.8.1.

## 6.2.7 Water Exchanges and Transfers

The City currently does not have any potable water transfer agreements, nor does the City anticipate participating directly in any such transfer opportunities in the future.

Zone 7 periodically supplements existing supplies with short-term transfers when needed and intends to more regularly acquire water transfers over the coming decade until major supply reliability project(s) come online starting around 2030. A transfer agreement with another SWP contractor using the SWP system—which Zone 7 is already invested in—is likely the most expedient and cost-effective transfer option. Transfer water would be conveyed to Zone 7 through the Delta and the SBA; the transfer amount could vary from year-to-year depending on hydrology but could average between 5,000 to 10,000 AFY. For the 2020 UWMP, Zone 7 is assuming 5,000 AFY in water transfers through 2030.

Zone 7 will continue to pursue and evaluate transfer opportunities in the Bay Area and statewide. Through the Bay Area Regional Reliability Partnership, Zone 7 is participating in a reclamation grant-funded project to develop a "Regional Water Market Program," which will identify transfer types and opportunities and develop a road map to facilitate transfers and exchanges in the Bay Area. Zone 7's existing water transfer supply sources and non-local storage options are detailed in Chapter 6 of Zone 7's 2020 UWMP.

## 6.2.8 Future Water Projects

The City obtains its potable water supply from Zone 7 and supports its efforts to pursue opportunities of future water supply projects. The City itself does not have any plans for new water supply projects, as shown in Table 6-8.

**Table 6-8. Expected Future Water Supply Projects or Programs (DWR Table 6-7 Retail)**

| | |
|---|---|
| ☑ | 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 |
| NOTES: The City does not plan to pursue opportunities for development of future water supply projects; rather, it supports Zone 7's efforts. | |

However, Zone 7 is pursuing several water supply projects to address potential future supply deficits as SWP reliability declines and Zone 7's service area population grows. These projects include reliability improvements for existing supplies and new supplies. Zone 7's "new supply" projects are described below. A complete list of potential programs and projects, along with additional detail, is available in Zone 7's 2019 WSE Update and 2020 UWMP.

#### *6.2.8.1 Bay Area Regional Desalination Project*

Brackish water desalination for Zone 7 would be accomplished through a joint venture among Bay Area water agencies—Contra Costa Water District (CCWD) and potentially EBMUD, the San Francisco Public Utilities Commission (SFPUC), Zone 7, and Valley Water—together known as the BARDP. This project is shown on Figure 6-6 and would involve constructing a regional brackish water treatment plant in eastern Contra Costa County producing 10-20 MGD. Water would be diverted using CCWD's Mallard Slough Pump Station. Using an existing water right license and permit, both held by CCWD, and/or a new water right, Zone 7 could potentially receive up to 5,600 AFY. Zone 7 could take delivery of this new water supply through a reliability intertie with EBMUD or through the Delta/SBA by exchanging water with CCWD. Furthermore, this project could potentially provide a new water supply component for the Los Vaqueros Reservoir Expansion project, which will expand the existing reservoir and connect it to the SBA and the California Aqueduct.

There has been recent renewed interest in desalination as part of the Bay Area Regional Reliability Partnership, and there may be new developments in the near-term. The water yield of the project is being re-evaluated, and the participating agencies may change. The BARDP is still in the planning phase, and there is no formally approved project at this time. If a project is approved over the next few years, it could be in service by 2030.

In Zone 7's 2020 UWMP, 5,000 AFY was assumed as the total potential yield from BARDP and/or potable reuse (described in Section 6.2.8.3) with either or both systems operational by 2030. As noted above, BARDP water could potentially be conveyed through a new intertie supplying the west side of Zone 7's transmission system. This mode of delivery provides an alternative conveyance not subject to Delta outages.

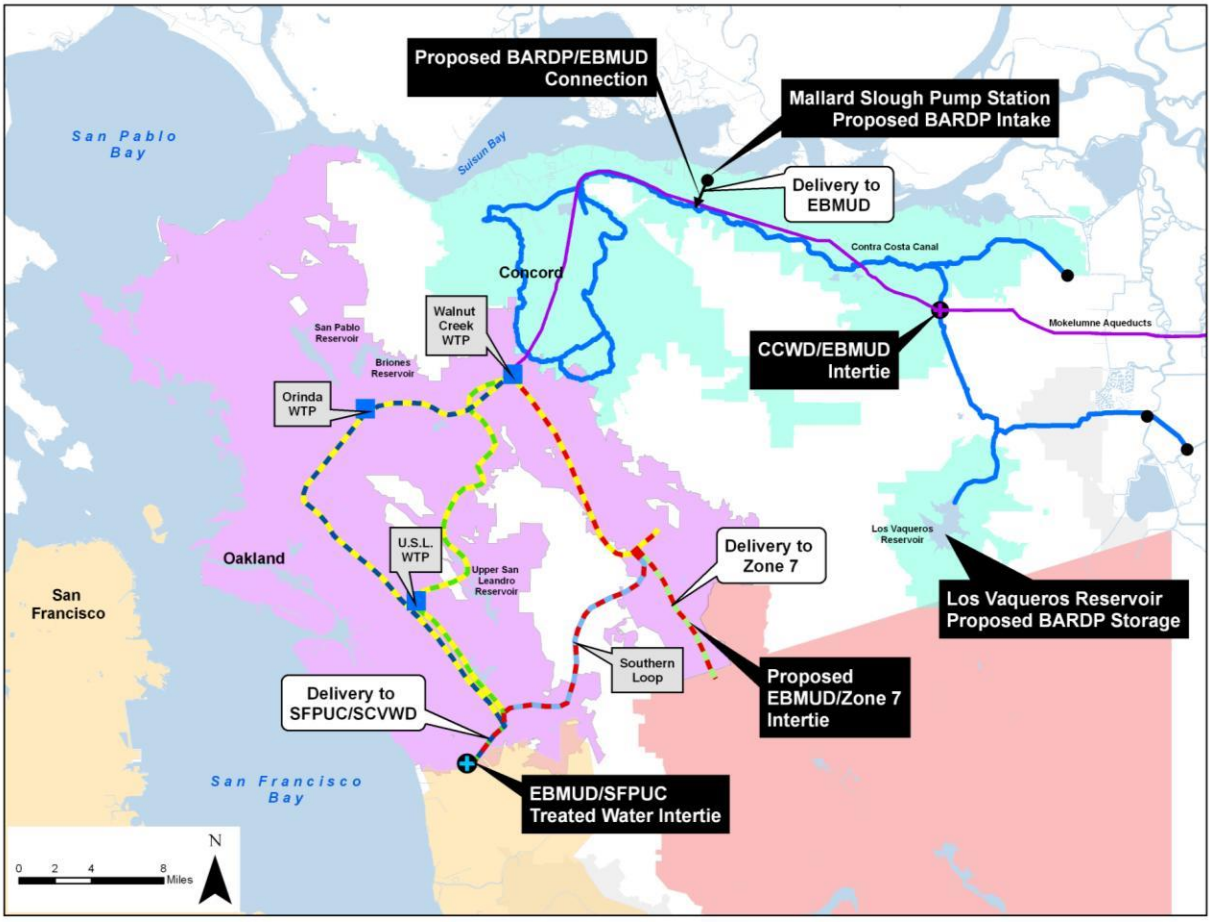


**Figure 6-6. Bay Area Regional Desalination Project: Diversion and Conveyance Facilities**

### *6.2.8.2 Delta Conveyance Project*

Accounting for imported and local surface water, the retailers' GPQs, and recycled water, the Tri-Valley area receives approximately 70 percent of its incoming water supplies through the Delta as delivered by DWR. For Zone 7, the Delta conveys about 90 percent of its existing incoming supplies under normal conditions. SWP water, carryover water, water banked in Kern County and transfer water all come through the Delta.

This key conveyance component of the SWP is increasingly threatened by ecosystem considerations, seismic risk, and climate change/sea level rise, reducing the reliability of the SWP system. DWR's proposed Delta Conveyance Project DCP) would install a new tunnel to convey freshwater from north of the Delta to a point south of the Delta. The DCP will likely increase SWP reliability and improve water quality, but an alternate conveyance system for the majority of Zone 7's water is the significant benefit as follows:

- A major Northern California earthquake could take out levees in the Delta. Experts suggest that fresh water supply through the Delta could be lost for months, if not a year or two. The DCP would provide an alternative conveyance of freshwater from north of the Delta (near Sacramento) to a point south of the Delta (near Byron) while levee repairs and other work are being completed.

- The South Delta is currently about 3 feet above sea level, while the North Delta is about 15 feet above sea level. Climate change projections call for sea level rise of 5 to 10 feet. This could render the South Delta unusable for portions of the year due to saltwater intrusion. The DCP would provide an alternative conveyance of freshwater from north of the Delta to a point south of the Delta when the Delta is too saline.

In July 2017, DWR approved the California WaterFix Project, which was a dual conveyance project that involved two new diversion points and two tunnels moving water from the Sacramento River north of the Delta under the Delta to SWP and Central Valley Project water pumping facilities in the South Delta. In the State of the State address in January 2019, Governor Newsom announced that he did not support WaterFix as configured but that he did support a single-tunnel conveyance project.

In January 2020, DWR released a Notice of Preparation (NOP) of an Environmental Impact Report (EIR) pursuant to CEQA for the DCP. Note that the DCP is part of Governor Newsom's portfolio approach to water management. While the proposed project in the DCP is a single tunnel up to 6,000 cubic feet per second (cfs), DWR is considering alternatives including capacities ranging from 3,000 to 7,500 cfs. Anticipated benefits include: 1) water supply reliability and SWP resiliency (climate change adaptation/stormwater capture, sea-level rise adaptation, seismic resilience), 2) South Delta flow pattern improvements for fisheries, 3) water transfer capacity and carriage water savings, and 4) water quality improvements for SWP deliveries. Potential DCP facilities are shown on Figure 6-7.

As described in Section 6.2.1.2.1.1, Zone 7 has a long-term contract with DWR for a Table A amount of 80,619 AFY from the SWP, but SWP reliability has decreased significantly over the years. Estimates of SWP reliability (i.e., projected long-term average of Table A allocations) have been adjusted over the years as they account for changing regulatory and operational conditions, among other factors. The 2019 DCR estimates SWP reliability will decrease from an average Table A allocation of 59 percent in 2020 to 54 percent Table A in 2040. The potential increase in SWP reliability from the DCP has not been incorporated in the 2019 DCR and will be evaluated once the project and its operational and permitting terms are better defined.

As described above, the DCP will protect the reliability of SWP supplies from the effects of climate change and seismic events, among other risks. DWR's current schedule for the DCP environmental planning and permitting extends through the end of 2024. The DCP will potentially be operational in 2040 following extensive planning, permitting, and construction. Since the DCP is not anticipated to be in service until the end of the 2020 UWMP planning period, its impacts on supply have not been incorporated in DWR's 2019 Delivery Capability Report and have not been included in Zone 7's 2020 UWMP to be conservative. With permitting efforts over the next few years, quantitative information on the reliability associated with the DCP will be included in Zone 7's 2025 UWMP.

Through mid-2024, DWR will be completing environmental planning efforts on the DCP. In November 2020, the Zone 7 Board approved continued participation in the DCP at a 2.2 percent participation level based on Zone 7's Table A amount of 80,619 AF. The Board also approved Zone 7 funding of these efforts up to $2,800,000 for calendar years 2021 and 2022. A separate future request for Zone 7 Board action would address participation and funding beyond 2022.

Continued participation by Zone 7 in the planning efforts will allow Zone 7 to elect to participate in the DCP implementation in the future based on information developed in the planning process, allow access by Zone 7 to information related to benefits and costs, and provide Zone 7 influence throughout the process. The work over the next two to four years will inform the Zone 7 Board's decision-making as the DCP continues to advance.

As a contractor of the SWP, Zone 7 is working very closely with DWR and other water agencies, environmental groups, regulatory agencies, and natural resource agencies to address the declining reliability of the SWP through the DCP and other efforts.

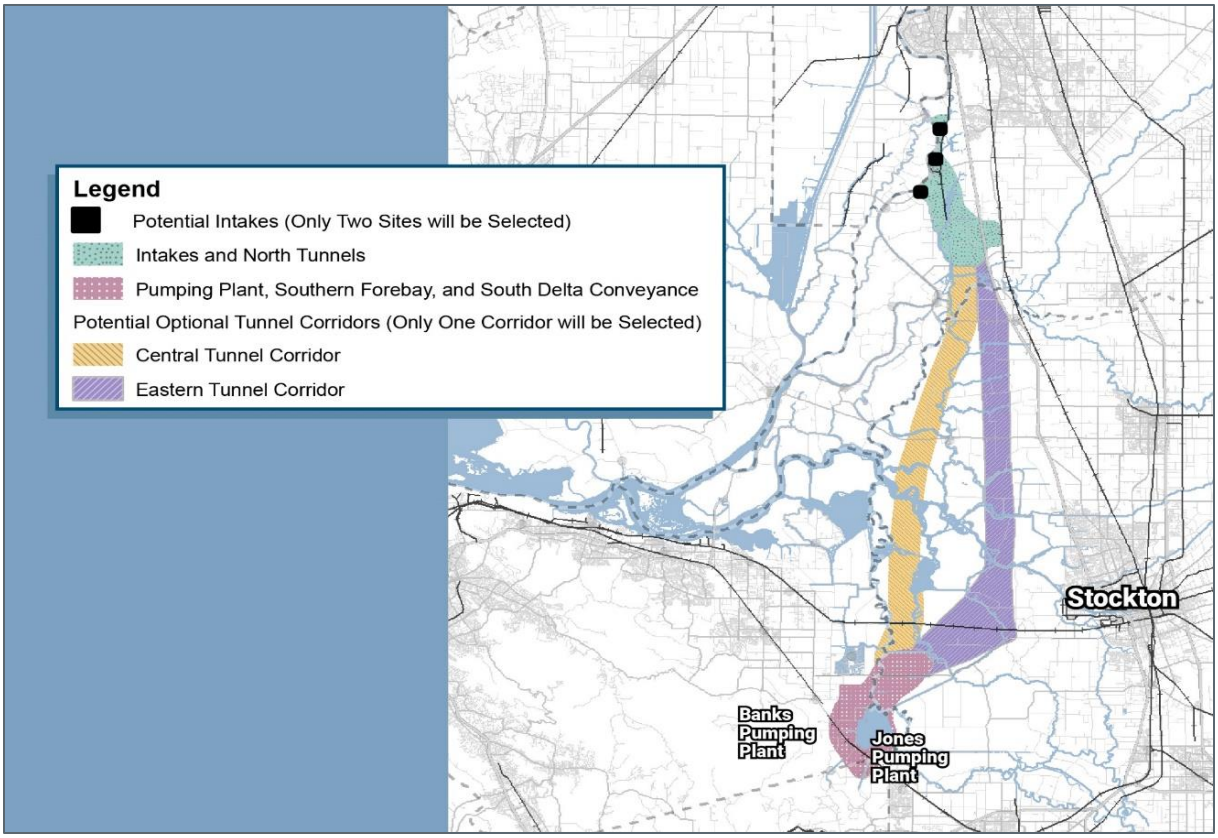


**Figure 6-7. Delta Conveyance Project: Potential Facilities**

### *6.2.8.3 Potable Reuse*

Potable reuse is the use of purified water derived from wastewater effluent to supplement potable water supplies. While recycled water, the use of treated wastewater for non-potable uses such as irrigation, has been available for many years in the Tri-Valley, potable reuse would be a new use of local wastewater resources collected by DSRSD and Livermore. Its main benefits include local production and control, drought resistance, and use of an existing water resource.

Potable reuse consists of indirect potable reuse (IPR) and direct potable reuse (DPR). IPR, which has been practiced in the State since the 1930s, uses an environmental buffer (e.g., groundwater aquifer or lake) to provide public health protection benefits, including contaminant dilution and time to detect and respond to failures before treatment and distribution. DPR bypasses the environmental buffer and delivers purified water either directly into the raw water supply immediately upstream of a treatment plant ("raw water

augmentation") or directly into the water distribution system ("treated drinking water augmentation"). The State is currently developing standard criteria for DPR. Specifically, AB 574 requires the SWRCB to adopt uniform water recycling criteria for raw water augmentation on or before December 31, 2023.

In 2018, the Tri-Valley Water Agencies completed the Joint Tri-Valley Potable Reuse Technical Feasibility Study[17] (Potable Reuse Study) with these goals: 1) to evaluate the feasibility of a wide range of potable reuse options for the Tri-Valley based on technical, financial, and regulatory considerations, and 2) assuming that potable reuse is found to be technically feasible, to recommend next steps for the agencies. The Potable Reuse Study also refined cost estimates for potable reuse.

The Potable Reuse Study investigated three potential end uses for purified water in detail: 1) groundwater augmentation or recharge via injection wells, 2) groundwater recharge via Chain of Lakes surficial recharge, and 3) raw water augmentation to Zone 7's Del Valle Water Treatment Plant. Looking at annual yields ranging from 5,500 to 10,000 AFY, the Potable Reuse Study concluded that potable reuse is technically feasible for the Tri-Valley, with benefits to reliability and water quality. The lower yield would use only Livermore wastewater supply with year-round operations, while the higher yield would be achieved with seasonal availability of DSRSD wastewater supply. Water availability would increase over time as development occurs in the Tri-Valley and more wastewater is generated and collected. In other words, the maximum yield is expected to only be available after a certain point in the future; only a fraction of the maximum yield is available before buildout.

In the 2019 WSE Update, raw water augmentation was modeled with the option for a two-phased project that initially produces a lower yield but increases to the maximum yield in 2035 (following a growth in available wastewater). Reflecting a more conservative estimate of future wastewater availability, the 2019 WSE Update used a reduced yield of 4,000 AFY starting in 2027 and 7,000 AFY after 2035. Conservation regulations have set low indoor water use targets for California, which are expected to reduce future wastewater flows. The estimates in the Potable Reuse Study had not incorporated the recently set statewide indoor water use targets. Future analyses will adjust estimates as necessary based on actual indoor water use trends and updated projections of wastewater availability for potable reuse.

Zone 7 is completing a number of technical studies over the next few years that will support continued evaluation of potable reuse options and their costs and benefits. For planning purposes, the Zone 7's 2020 UWMP assumes 5,000 AFY of future supply from BARDP (discussed in Section 6.2.8.1) and/or potable reuse, with either or both systems online by 2030.[18]

[17]Tri-Valley Agencies and Carollo Engineers, 2018. Joint Tri-Valley Potable Reuse Technical Feasibility Study, http://www.zone7water.com/library/reports-planning-documents.

[18] Pleasanton City Council voted not to participate in a regional potable reuse project at its February 21, 2021 City Council Meeting.

### 6.2.8.4 Sites Reservoir

Sites Reservoir is a proposed new 1,500,000 AF off-stream storage reservoir in northern California near Maxwell. Sacramento River flows will be diverted during excess flow periods and stored in the off-stream reservoir and released for use in the drier periods. Shown on Figure 6-8, Sites Reservoir aims to supplement and optimize use of the State's existing storage and conveyance systems such as the CVP's Shasta Reservoir and the SWP's Oroville Reservoir, which collects much of the water for the SWP system.

The participants in the Sites Reservoir project include 31 entities, including Zone 7 and several other SWP contractors. Sites Reservoir is currently undergoing environmental planning and permitting and is expected to provide approximately 240 TAF per year[19] of additional deliveries on average to participating agencies under existing conditions. Operations modeling will continue to be refined over the next few years to reflect a range of permit and operational conditions, which will define the ultimate yield. For example, it is uncertain at this time whether the delivery of Sites Reservoir releases using SWP facilities in the Delta could result in a "carriage loss," which would reduce the net yield to Zone 7 and other SWP contractors. Full operation of the Sites Reservoir is estimated to start by 2029 following environmental planning, permitting, and construction.

Sites Reservoir is expected to provide water supply, environmental, flood, and recreational benefits. Consequently, Sites Reservoir was conditionally awarded $816 million from the California Water Commission for ecosystem, recreation, and flood control benefits under Proposition 1. The US Bureau of Reclamation (Reclamation) may also invest in Sites Reservoir under the Water Infrastructure Improvements for the Nation Act and recently transmitted a final Federal Feasibility Report to Congress for the project.

The Sites Project Authority (Authority) was formed on August 26, 2010 as a joint powers authority to pursue the development and construction of Sites Reservoir. The Authority is governed by a 12-member Board of Directors representing Sacramento Valley leadership in government and water management. Water agencies across California—including Zone 7—that are investing in the project are members of the Sites Reservoir Project Committee, which oversees the planning efforts and provides recommendations to the Authority.

[19] Sites Project Management Team, 2020. Sites Project Value Planning Alternatives Appraisal Report. https://3hm5en24txyp2e4cxyxaklbs-wpengine.netdna-ssl.com/wp-content/uploads/2020/04/INT-REP-Value-Planning-Appraisal-Report-FinalV2Compressed.pdf

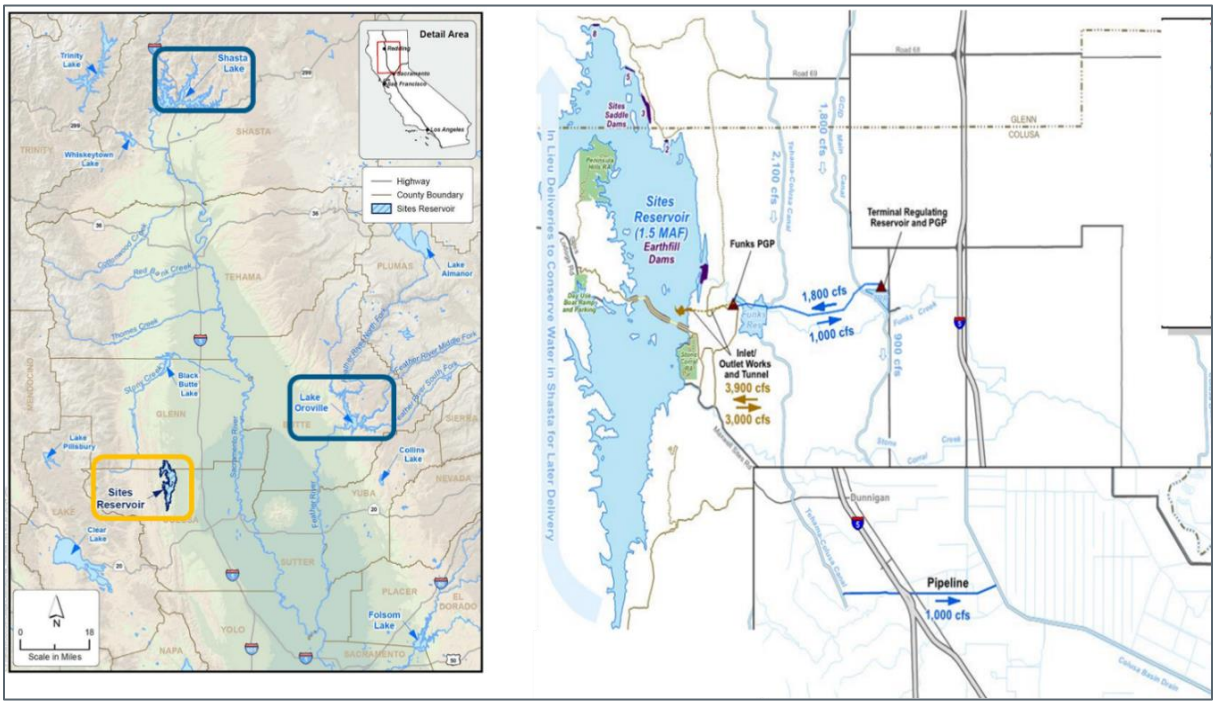


**Figure 6-8. Sites Reservoir Project: Location and Facilities**

Sites Reservoir could provide both water supply and storage for Zone 7. In December 2016, the Zone 7 Board authorized participation in Phase 1 at a cost of $850,000. In December 2019, the Zone 7 Board authorized participation in Phase 2 (2019 Sites Reservoir Project Agreement) at a cost of $600,000. The Zone 7 Board then approved continued participation in Phase 2 through December 2021 at an amount not-to-exceed $1,000,000 in July 2020. Key work under these two phases include planning, design, financial analysis, and environmental review and permitting.

In the 2019 WSE Update, Zone 7 considered 5,000 to 10,000 AFY of average yield from Sites Reservoir, in combination with other water supply options. The availability of this supply was varied based on hydrology, with more water delivered to Zone 7 during dry years. At Zone 7's request, water would be released from Sites Reservoir annually to the Sacramento River, then conveyed by the SWP system through the Delta and to the SBA. Based on model results, Sites Reservoir's key benefit is the availability of water during dry years when the shortage risk is greatest. Sites Reservoir is a good complement to the DCP, which could potentially increase SWP yield during wet years. Because Sites Reservoir provides both storage and new supply, it adds flexibility to Zone 7's water supply system; for example, the timing of deliveries from Sites Reservoir could be modified to maximize yields from other water supplies and/or to accommodate delivery timing restrictions of other supplies. For Zone 7, water could be released from Sites Reservoir annually to the Sacramento River, generally during dry and critical years, then conveyed by the SWP system through the Delta and to the SBA.

Recently, the Zone 7 Board re-affirmed continued participation in Sites Reservoir at a 10,000 AFY share. Zone 7's 2020 UWMP therefore assumes an average water supply of 10,000 AFY to Zone 7 from Sites Reservoir.

## 6.2.9 Summary of Existing and Planned Sources of Water

Table 6-9 summarizes actual water supplies for the City in 2020, while Table 6-10 summarizes projected water supplies for the City through 2045.

**Table 6-9. Water Supplies – Actual (DWR Table 6-8 Retail)**

| Water Supply | Additional Detail on Water Supply | 2020 | | |
|---|---|---|---|---|
| **Drop down list** | | Actual Volume* | Water Quality Drop Down List | Total Right or Safe Yield* (optional) |
| Purchased or Imported Water | Zone 7 | 11,752 | Drinking Water | |
| Groundwater (not desalinated) | Livermore Valley Basin | 3,027 | Drinking Water | |
| Recycled Water | DSRSD RWTF and City of Livermore WRP | 1,228 | Recycled Water | |
| | **Total** | 16,006 | | 0 |
| ***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.* | | | | |
| NOTES: Volumes are in AF. Recycled water use includes approximately 3 AF of use at the DSRSD RWTF. | | | | |

**Table 6-10. Water Supplies – Projected (DWR Table 6-9 Retail)**

| Water Supply | Additional Detail on Water Supply | Projected Water Supply * Report To the Extent Practicable | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2025 | | 2030 | | 2035 | | 2040 | | 2045 (opt) | |
| **Drop down list** | | 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 | Zone 7 | 13,240 | | 13,739 | | 14,237 | | 14,736 | | 14,736 | |
| Groundwater (not desalinated) | Livermore Valley Basin | 3,500 | | 3,500 | | 3,500 | | 3,500 | | 3,500 | |
| Recycled Water | DSRSD RWTF and City of Livermore WRP | 1,500 | | 1,650 | | 1,650 | | 1,800 | | 1,800 | |
| **Total** | | 18,240 | 0 | 18,889 | 0 | 19,387 | 0 | 20,036 | 0 | 20,036 | 0 |
| ***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.* | | | | | | | | | | | |
| NOTES: Volumes are in AF. The City's Groundwater Pumping Quota (GPQ) is 3,500 AFY. | | | | | | | | | | | |

## 6.2.10 Climate Change Impacts

There are concerns that a warming trend that occurred during the latter part of the 20th century will likely continue through the 21st century. Numerous studies have been conducted to evaluate the potential impacts of these changes to water resources. Based on these studies, climate change could impact California's water resources in the following ways:

- Reductions in the average annual snowpack due to a rise in the snowline and a shallower snowpack at low and medium elevations 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
- Increased evaporation and concomitant increased irrigation need
- Changes in urban and agricultural water demand

As described above, the SWP has been and will continue to be the largest source of Zone 7's, and hence the City's, water supplies. In 2045, the supplies derived from the SWP (existing SWP supplies, groundwater (stored SWP supplies), and SWP carryover) are projected to represent about 75 percent of Zone 7's supplies.

The following summarizes the potential impacts of climate change to water supply operations in the Delta, as they relate to water supply reliability, water quality, and flood control:

- Water Supply Reliability
  - The operation of storage reservoirs could be impacted by shifting runoff and snowmelt patterns, requiring a greater volume of flood control storage, and making it more difficult to refill reservoir flood control storage during late spring or early summer, and potentially reducing the volume of surface water available for use during the summer/fall season.
  - Levee breaks, either as a result of the impacts of rising sea levels, lack of maintenance, earthquake, or some combination, could have adverse effects on Delta water quality (due to the intrusion of salt water into these potable water supplies) and water system operations. Major levee breaks could take months or years to repair and will impact the availability of water supplies from the Delta.
- Water Quality
  - More intense storms and increased runoff could impact Delta water quality in two ways: 1) Increased sediment load, and 2) Increased contaminants from increased urban and agricultural runoff.
  - Sea level rise could push salt water from the Bay into the Delta, impacting overall water quality and potentially impacting Delta operations.
  - Levee breaks, either as a result of the impacts of climate change or an earthquake, could cause large amounts of salt water from the Bay to enter the Delta and would have adverse effects on Delta water quality and water system operations. The saltwater intrusion could take months to dissipate depending on the severity of the levee break and the magnitude of saltwater intrusion.
- Flood Control
  - Reservoir operations, including the need for more flood storage reservoir space, could be impacted by snowpack changes, shifts in snowmelt patterns, and changes in rainfall intensity.

- Deteriorating levees could fail as a result of increased runoff, more intense storms, sea level rise, or lack of maintenance. Failure of the levees would have catastrophic impacts on the Delta, including its islands, and have huge impacts on water supply operations.

Climate change may also impact Zone 7's other operations. With respect to groundwater management, the SMP, groundwater recharge operations, and Chain of Lakes operations may be impacted by changes in precipitation patterns and intensities. Similarly, operation of Lake Del Valle could be impacted by the need to maintain more flood control storage capacity to deal with more intense rainfall events. Lastly, flood control operations in general may be impacted by more intense and more frequent flooding events.

The scenarios in the 2019 DCR account for climate change impacts based on 2035 emissions levels and 45-centimeter sea level rise; therefore, these impacts have been incorporated into Zone 7's water supply planning efforts. Zone 7 has also evaluated the impacts of climate change to local water supplies and documented those evaluations in the 2019 WSE Update.

## 6.3 ENERGY INTENSITY

In accordance with CWC §10631.2(a), the energy intensity to provide water service to the City's customers over a one-year period is presented in this section to the extent that the information is available. The amount of energy to divert, pump, treat, and distribute the City's water supply within the system it owns and operates is included. The amount of energy that Zone 7 requires to treat raw water and deliver potable water to the City is excluded.

Water energy intensity is the total amount of energy, calculated on a whole-system basis, used to deliver water to the City's customers for use. Energy intensity is the total amount of energy in kilowatt-hours (kWh) expended per AF of water taken from the City's source to its point of delivery. Understanding the whole-system energy intensity would allow the City to develop the following water supply management and system operation strategies:

- Identifying energy saving opportunities, as energy consumption is often a large portion of the cost of delivering water
- Calculating energy savings and greenhouse gas emissions reductions associated with water conservation programs
- Identifying potential opportunities for receiving energy efficiency funding for water conservation programs
- Informing climate change mitigation strategies
- Benchmarking energy use at each water acquisition and delivery step and comparing energy use among similar agencies

In Table 6-11, the energy intensity of the City's water service is calculated for 2019, as it provides a typical year's energy use. In 2020, shelter-in-place orders and business restrictions related to the COVID-19 pandemic may have altered water use by the City's customers. The total energy intensity for the City's water service is approximately 203 kWh/AF. Note, 2019 energy consumption information is from billing statements received in 2019, which may not exactly reflect energy use from January 1 through December 31.

**Table 6-11. Recommended Energy Intensity (DWR Table O-1B)**

| | | | | |
|---|---|---|---|---|
| Enter Start Date for Reporting Period | 1/1/2019 | **Urban Water Supplier Operational Control** | | |
| End Date | 12/31/2019 | | | |
| ☐ Is upstream embedded in the values reported? | | **Sum of All Water Management Processes** | **Non-Consequential Hydropower** | |
| *Water Volume Units Used* | *AF* | Total Utility | Hydropower | Net Utility |
| *Volume of Water Entering Process (volume unit)* | | *13,878* | *0* | *13878* |
| *Energy Consumed (kWh)* | | *2,817,999* | *0* | *2817999* |
| *Energy Intensity (kWh/volume)* | | *203.1* | *0.0* | *203.1* |

**Quantity of Self-Generated Renewable Energy**

0 kWh

**Data Quality** *(Estimate, Metered Data, Combination of Estimates and Metered Data)*

*Metered Data*

**Data Quality Narrative:**

Data is provided by the City from flow meters in the water distribution system and electric meters at its water facilities.

**Narrative:**

Water management processes consuming energy include distribution/pumping, storage tank operations, and groundwater pumping and treatment.

As discussed in Section 6.2.5, the City collects and transports wastewater to be treated by DSRSD and Livermore. The energy intensity associated with the City's wastewater services (i.e., collection/ conveyance only) for 2019 is provided in Table 6-12. The total energy intensity for the City's wastewater services is approximately 40.8 kWh/AF.

The City's recycled water system does not consume significant amounts of energy. DSRSD and Livermore's wastewater and recycled water systems are outside of the City's operational control; thus, energy required for DSRSD to treat wastewater from the City, and energy for DSRSD and Livermore to produce and deliver recycled water to the City, are excluded. Since the City's recycled water distribution system currently consists of only pipelines, the total energy intensity for the City's recycled water services is 0 kWh/AF.[20]

[20] The City has constructed a recycled water booster pump station at the Ken Mercer Sports Park, but it was not put into service until 2021.

## Table 6-12. Recommended Energy Intensity – Wastewater & Recycled Water (DWR Table O-2)

| Enter Start Date for Reporting Period 1/1/2019<br>End Date 12/31/2019 | | Urban Water Supplier Operational Control | | | |
|---|---|---|---|---|---|
| | | Water Management Process | | | |
| ☐ Is upstream embedded in the values reported? | | Collection / Conveyance | Treatment | Discharge / Distribution | Total |
| **Volume** of Water Units Used | AF | | | | |
| *Volume of Wastewater Entering Process (volume units selected above)* | | *7,279* | *0* | *0* | *7,279* |
| *Wastewater Energy Consumed (kWh)* | | *297,198* | *0* | *0* | *297,198* |
| *Wastewater Energy Intensity (kWh/volume)* | | *40.8* | *0.0* | *0.0* | *40.8* |
| *Volume of Recycled Water Entering Process (volume units selected above)* | | *0* | *0* | *873* | *873* |
| *Recycled Water Energy Consumed (kWh)* | | *0* | *0* | *0* | *0* |
| *Recycled Water Energy Intensity (kWh/volume)* | | *0.0* | *0.0* | *0.0* | *0.0* |

**Quantity of Self-Generated Renewable Energy related to recycled water and wastewater operations**

0 kWh

**Data Quality** *(Estimate, Metered Data, Combination of Estimates and Metered Data)*

*Combination of Estimates and Metered Data*

**Data Quality Narrative:**

Wastewater data is provided by the City from flow meters in its collection system and electric meters at its sewer pump stations. The City's wastewater flows to DSRSD's RWTF are metered, while its flows to the City of Livermore's LWRP are estimated at 280 AF based on typical domestic water use. Recycled water flows are from DERWA meters.

**Narrative:**

Wastewater is collected in the City and sent to DSRSD's RWTF for treatment. Therefore, collection and conveyance are the City's only wastewater management processes in which energy is consumed. Since the City's recycled water system currently consists of only pipelines, the City does not consume any energy distributing recycled water to its customers. DSRSD and the CIty of Livermore produce and pump recycled water to the City's distribution system.

# CHAPTER 7
# Water Service Reliability and Drought Risk Assessment

This chapter describes the City's water service reliability under various hydrologic conditions, including a severe drought for the next five years. The City's existing and planned water management tools for increasing water supply reliability are also addressed. Responses to actual water shortage conditions are detailed in Chapter 8 of this plan.

The reliability of the City's potable water supply is largely dependent upon its water supply from Zone 7 and Zone 7's water supply reliability policy. On October 17, 2012, the Zone 7 Board approved a revised Water Supply Reliability Policy (Resolution No. 13-4230, included as Appendix I), which adopts the following level of service goals to guide the management of Zone 7's treated water (also referred to as municipal and industrial or (M&I) supplies and its Capital Improvement Program (CIP):

- **Goal 1**: Zone 7 will meet its treated water customers' water supply needs, in accordance with Zone 7's most current Contracts for M&I Water Supply, including existing and projected demands as specified in Zone 7's most recent UWMP, during normal, average, and drought conditions, as follows:
  - At least 85 percent of M&I water demands 99 percent of the time
  - 100 percent of M&I water demands 90 percent of the time
- **Goal 2**: Provide sufficient treated water production capacity and infrastructure to meet at least 80 percent of the maximum month M&I contractual demands should any one of Zone 7's major supply, production, or transmission facilities experience an extended unplanned outage of at least one week.

## 7.1 WATER SERVICE RELIABILITY ASSESSMENT

Approximately 80 percent of the City's water is purchased from Zone 7, which is comprised of treated surface water blended with some local groundwater. The remaining 20 percent comes from local groundwater pumped from wells owned and operated by the City. As discussed in Chapter 6, the groundwater basin is managed by Zone 7, and the City has a GPQ. Additionally, the City receives recycled water from the DSRSD RWTF (through an agreement with DERWA) and the LWRP.

As the City's exclusive potable water wholesaler, Zone 7's water supply reliability greatly affects the City's water supply reliability. Therefore, a significant portion of this section presents the constraints on Zone 7's existing and planned water sources and summarizes the historical basis for projecting available supplies in various hydrologic conditions (i.e., normal year, single dry year, and five consecutive dry years).

The City's water service reliability is then presented in five-year increments through 2045 based on earlier analysis of water use (Chapter 4 of this plan) and water supply (Chapter 6 of this plan). Finally, this section discusses the City's water management tools and options to promote regional supply reliability and minimize the need to import water from other regions.

### 7.1.1 Constraints on Water Sources

This section discusses the constraints on Zone 7's water supply sources that affect their reliability and Zone 7's strategies for managing the risks associated with each supply. Constraints on groundwater and recycled water are also discussed.

#### *7.1.1.1 Potable Water from Zone 7*

One of the main limitations of Zone 7's water system is the lack of interties. All of Zone 7's imported water supplies are conveyed through the Delta and the SBA; Arroyo Valle water is also conveyed through the SBA. Zone 7 has been working closely with DWR, VW, and ACWD to improve the reliability of the SBA. Between 2003 and 2012, DWR made improvements to the SBA within Zone 7's service area to increase capacity and improve reliability. The work included a new pump station (180 cubic feet per second (cfs)), inline reservoir (500 AF) and increased the canal carrying capacity to 380 cfs. As part of this project, Zone 7 had an emergency slide gate installed to maintain service in the event of a pipeline rupture downstream. Zone 7 will continue coordinating with DWR and South Bay Contractors to improve the reliability of the entire SBA system

In addition, Zone 7 is pursuing the following projects to diversify its conveyance options:

- **Reliability Intertie** – Zone 7 is also planning for the construction of a reliability intertie with another major water agency that would provide an alternative means of conveying water to Zone 7's service area when the Delta and/or the SBA undergo an outage. For example, an intertie with EBMUD could convey treated water supply to the western portion of Zone 7's service area.
- **Chain of Lakes Pipeline** – This pipeline would allow for access to water stored in the Chain of Lakes as an alternative local water supply; water would be accessible to the Del Valle Water Treatment Plant (WTP) via one of the SBA turnouts.

Specific constraints for each of Zone 7's supplies are discussed below.

##### 7.1.1.1.1 Imported Water: State Water Project

Two key constraints on imported water from the SWP are Delta conveyance and water quality. Each constraint is detailed below.

###### *7.1.1.1.1.1 Delta Conveyance*

Zone 7's long-term contract with DWR for SWP water provides Zone 7 access to Table A water (and Article 56c water or carryover), Article 21 water, Article 56d water, and Yuba Accord water. As an SWP contractor, Zone 7 is also able to use SWP facilities for conveying water transfers or exchanges of SWP water (from another contractor) or from another water agency outside of the SWP system. SWP water moves through the Delta before it is conveyed by the California Aqueduct and the SBA to Zone 7's water facilities.

The instability of the aging levees in the Delta (including their vulnerability to seismic events and climate change), regulatory uncertainty, water quality issues including saltwater intrusion, and the declining health of the Delta ecosystem all challenge the long-term reliability of the SWP and, more generally, the water conveyance capability of the Delta. These issues directly challenge the Tri-Valley's long-term water supply reliability since a majority of Zone 7's water supply is and will continue to be tied to the Delta and SWP system.

In 2018, DWR published their Delta Flood Emergency Management Plan, which provides strategies for responding to Delta levee failures. This plan includes a strategy to establish an emergency freshwater pathway from the central Delta along Middle River and Victoria Canal to the export pumps in the south Delta. The plan also includes the pre-positioning of emergency construction materials at existing and new stockpile and warehouse sites in the Delta. The plan has found that using pre-positioned stockpiles of rock, sheet pile and other materials, multiple earthquake-generated levee breaches and levee slumping along the freshwater pathway can be repaired in less than six months.

The DWR Delta Levees Subventions and Special Projects Programs have prioritized, funded, and implemented levee improvements along the emergency freshwater pathway and other water supply corridors in the central and south Delta. These efforts are complementary to the Delta Flood Emergency Management Plan, which, along with pre-positioned emergency flood fighting materials, ensures reasonable seismic performance of levees and timely pathway restoration after a severe earthquake.

Furthermore, Zone 7 and other SWP contractors are currently working with DWR and other key stakeholders to address the many complex issues undermining the Delta through the proposed DCP. The proposed new diversion structure in the northern Delta provides alternative intakes in case the Delta is affected by an earthquake, levee failure, or some other catastrophic event that impacts water quality and prevents pumping from the Delta. The DCP would also provide alternative intakes that could be used to minimize harm to endangered and threatened species in the Delta. DWR is working closely with regulatory and natural resource agencies to address regulatory uncertainty and protect the Delta ecosystem under an adaptive management framework based on the best available science. With these benefits, the DCP is expected to significantly alleviate constraints on SWP operation and provide more water supply reliability.

Zone 7 is also participating in the Los Vaqueros Reservoir Expansion project, which includes construction of the Transfer-Bethany Pipeline. This pipeline would provide an alternative means of conveying water supply to Zone 7 when the Delta is inaccessible. More details can be found in Chapter 6 of Zone 7's 2020 UWMP.

#### *7.1.1.1.1.2 Water Quality*

There are water quality concerns associated with transport through the Delta. In 1982, DWR formed the Interagency Delta Health Aspects Monitoring Program to monitor water quality in the Delta and protect human health. The program was renamed the Municipal Water Quality Investigations Program in 1990. From a municipal water supply perspective, water quality issues in the Delta are associated with salinity from seawater intrusion, wastewater effluent discharges, agricultural drainage from the islands, and recreational activities. Water quality issues of specific concern to Zone 7 are:

- *Algal byproducts* – Parameters of concern include compounds that cause taste and odor (T&O) and algal toxins. T&O is primarily a problem in the warmer months when algal blooms may be present. It can affect supplies from the Delta and from Lake Del Valle (which stores SWP water). Algae produce geosmin and 2-methylisoborneol, which are key T&O-causing compounds in surface water supply. Algal toxins derived from blue-green algae can also be a concern. Zone 7's new ozonation facilities (recently installed at the Del Valle WTP and scheduled for completion at the Patterson Pass WTP in 2022) effectively treat algal byproducts. Without ozonation, high levels of algal byproducts in both Delta and Lake Del Valle supplies may necessitate temporarily switching to groundwater supplies; blending of sources is also an option depending on the source of algal byproducts and severity.

- *Total and dissolved organic carbon (TOC/DOC)* – Zone 7 treats organic carbon with coagulant and disinfectant chemicals, and therefore higher levels of organic carbon increase costs. In addition, TOC/DOC help form disinfectant byproducts (DBPs), which are regulated compounds in drinking water. Historically, Zone 7's WTPs have managed high TOC/DOC by increasing coagulant dosages. However, this operational change results in greater sludge production and limits plant production. The use of ozone reduces coagulant and chlorine demands, thus reducing typical chlorination DBPs; however, formation of ozonation DBPs such as bromate will need to be controlled.
- *Turbidity* – like TOC/DOC, turbidity affects the amount of chemicals used in treatment and Zone 7's ability to meet drinking water standards. It also can reduce the production capacities of Zone 7's WTPs, requiring increased groundwater production under high demands. Coagulant dosages can be adjusted to address high turbidity (which can happen after big storms), but if filters require more frequent backwashing, then production may be decreased.
- *Salinity or TDS* – salinity has significant impacts on SWP operations and the availability of water. To meet the salinity objectives in the Delta, water exports from the Delta may be restricted, reducing the amount of water supply available during certain times of the year. Salinity intrusion can be a problem during dry years, when there is insufficient freshwater to repel salinity. Sea level rise due to climate change is also expected to increase salinity in Delta. Finally, levee breaks—due to earthquakes and other factors—would result in significant saltwater intrusion from the Bay as water floods affected islands in the Delta that are below sea level.
- *Algal blooms* – in addition to T&O and the threat of algal toxins, algal blooms can significantly degrade filter performance through clogging. This reduces plant production capacities and could require supplemental groundwater use.

As noted above, Zone 7 will have state-of-the-art ozonation facilities at both of its WTPs in 2022, improving treatment of T&O, TOC/DOC, turbidity, and algal blooms and significantly increasing the surface water system's reliability.

In 2008, the SBA contractors (ACWD, Valley Water, and Zone 7) developed the SBA Watershed Protection Program to protect water quality once the water from the Delta reaches the SBA. The primary objectives of the SBA Watershed Protection Program include developing a Watershed Management Program for the SBA system, including Lake Del Valle and Bethany Reservoir, and protecting local drinking water and water resources from identified contaminant sources (e.g., septic tanks) for urban, agricultural, recreational, and environmental uses.

#### 7.1.1.1.2 Arroyo Valle and Lake Del Valle

ACWD and Zone 7 both have water rights to divert water from the Arroyo Valle. This water is captured and stored in Lake Del Valle, which is owned and operated by DWR. Since Lake Del Valle is used for water supply storage, flood control, and recreation, access to water from the lake needs to be coordinated with the lake's other uses. Typically, DWR lowers the lake elevation after Labor Day for flood control purposes, allowing Zone 7 and ACWD to put runoff from the Arroyo Valle to beneficial use. In the summer months, lake elevations are raised for recreational purposes. Historically, access to Zone 7's stored water in Lake Del Valle has not been problematic, unless there is an outage on the Del Valle Branch pipeline. Zone 7 closely coordinates use of Arroyo Valle water with both ACWD and DWR.

Water collected from the local watershed is protected under the SBA Watershed Protection Program Plan. In general, the water quality of Arroyo Valle runoff is good and does not affect the reliability of this water supply; however, as noted above, T&O can also affect supplies from Lake Del Valle. Zone 7 treats T&O using ozonation, although a switch to groundwater supplies is sometimes necessary under excessive levels of T&O compounds. Algal blooms in the lake can also reduce production capacities, though new ozonation facilities at the Del Valle WTP has significantly reduced the impact.

#### 7.1.1.1.3 Chain of Lakes

The future Chain of Lakes will provide significant local storage, but uncertainty surrounds its complete transfer to Zone 7. Favorable economic conditions could extend gravel mining operations, and even after mining ceases, reclamation must occur. This could delay a full transition of the Chain of Lakes to Zone 7 to about 2060. Zone 7 continues to work closely with the mining companies and quarry operators so planning efforts can be coordinated.

With future completion of the Chain of Lakes Pipeline around 2025, Zone 7 can begin to use the available lakes to store imported or local surface water. This will also enhance groundwater recharge in the Main Basin.

#### 7.1.1.1.4 Non-Local Storage

Access to banked water in Semitropic and Cawelo—both located downstream of Zone 7—requires exchange(s) with other SWP contractors located south of Kern County (e.g., Metropolitan Water District). There must be sufficient water flowing through the Delta and California Aqueduct system to facilitate these exchanges, which could be challenging during a drought. Furthermore, the banked water must be conveyed through the Delta, rendering this supply susceptible to the Delta disruptions described in Section 7.1.1.1.

During the recent drought, access to banked water became uncertain because of the historically low Table A allocation (leading to minimal amounts of water moving through the SWP) and the potential cessation of pumping in the Delta to control salinity intrusion. DWR was able to manage salinity so that Delta pumping could continue, and, with coordination among stakeholders including Zone 7, DWR prioritized the delivery of banked water to Zone 7 and other SBA contractors. Ultimately, even during the serious drought conditions in 2014 and the minimal 5 percent SWP allocation, Zone 7 was able to successfully recover almost 15,000 AF, or approximately 78 percent of the maximum recovery requested by Zone 7. In 2015, Zone 7 recovered approximately 18,000 AF from non-local storage.

Zone 7 will continue to coordinate closely with DWR, other SWP contractors, Semitropic, and Cawelo to ensure the future reliability of the banked water supplies.

Some of Semitropic's wells are affected by arsenic. This contaminant is currently being managed through treatment before the affected groundwater water is pumped into the California Aqueduct. Arsenic criteria have been established for this "pump-in" by the DWR Facilitation Group to mitigate any impacts to the downstream SWP contractors. Semitropic and the banking partners have developed a coordination process for discussing arsenic treatment. While the presence of arsenic in the Semitropic groundwater bank is likely to increase the cost of this water storage option, it is not likely to affect its overall reliability.

### 7.1.1.2 Groundwater

Chapter 6 of this plan details the issues affecting the City and Zone 7's use of the Main Basin, specifically water quality management and prevention of overdraft.

Zone 7 is actively implementing its Salt and Nutrient Management Plan. Salinity levels are being addressed primarily through groundwater pumping and demineralization using the MGDP in the Mocho wellfield. The facility simultaneously allows for the export of concentrated minerals or salts from the Main Basin while improving the water quality of treated water.

Zone 7 has several groundwater wells with naturally-occurring Cr(VI) concentrations near the MCL and PFAS above the notification limit. In response, Zone 7 is actively managing flows from the affected wells. Conditions are regularly monitored, and management actions may change in the future. A PFAS treatment facility is under consideration for construction based on pending regulations.

Zone 7 continues to study the groundwater basin and develop new tools (e.g., an improved groundwater model) to better understand the levels of groundwater extraction possible under various conditions while maintaining levels above the historical levels that have been reached in certain portions of the Main Basin ("historic lows"). Zone 7 also plans to augment its ability to recharge the Main Basin (e.g., through the Chain of Lakes) to increase local storage and allow for more pumping when necessary, which will improve both water supply reliability and salt management. Zone 7 plans to build an additional demineralization facility to continue to decrease the salt content of the Main Basin.

Finally, Zone 7 plans to build additional wells to allow for improved management of groundwater levels and to increase groundwater production capacity during droughts and surface water-related outages. A new booster pump station will improve Zone 7's ability to convey groundwater throughout Zone 7's service area and increase production capacity.

The City has a GPQ of 3,500 AFY from the Main Basin, which comprises approximately 20 percent of its water supply. The City may also carry over any unused portion of its annual GPQ up to a total of 700 AF. GPQ's for the Main Basin were determined based on the natural sustainable yield of the Main Basin. As such, the City's groundwater supply from its GPQ is considered reliable under all hydrologic conditions.

### 7.1.1.3 Recycled Water

The recycled water that the City receives comes from DSRSD's RWTF and the LWRP, which are described in Section 6.2.5.2. Both facilities produce Title 22 disinfected tertiary recycled water. The City anticipates no significant changes to the land uses in either DSRSD's or Livermore's wastewater service area; therefore, it does not anticipate any changes to the quality of the wastewater effluent used to produce recycled water. The City does not expect recycled water quality issues to impact its ability to reliably deliver recycled water to its customers.

On March 25, 2019, DERWA found that it cannot meet the combined peak demands and projected demands of its member agencies (DSRSD and EBMUD) and its retailer, the City. DERWA approved Resolution No. 19-3 (Appendix J) requesting that its member agencies take action to reduce recycled water demands and implement a connection moratorium. As discussed in Section 6.2.5.1.1, the City maintains the first right to use the secondary effluent produced from wastewater originating from the City's wastewater collection system for recycling. While the City's recycled water supply is limited by the secondary wastewater effluent from its service area, this supply is expected to meet the City's current and projected recycled water demands.

## 7.1.2 Year Type Characterization

The City's potable water supply reliability and vulnerability are directly related to seasonal and climatic shortages that impact Zone 7's water supplies. The quantity available from different supply sources varies annually depending on hydrologic conditions. Consequently, Zone 7 reviewed historical data and developed a projected yield for each water supply source (including the Main Basin) under three conditions: (1) normal water year, (2) single dry year, and (3) five-consecutive-year drought. Each condition is 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 in the historical sequence with the lowest annual runoff or allocation.
- *Five-Consecutive-Year Drought*: The driest five-year historical sequence.

Zone 7's water supply reliability is used to represent the City's available supplies during the above hydrologic conditions. The projected yield of Zone 7's water sources under these three scenarios, as detailed in Zone 7's 2020 UWMP, are summarized below.

In its 2020 UWMP, Zone 7 provides a basis of water year data table (DWR Table 7-1) for each of its water supply sources. For simplicity, this plan leaves DWR Table 7-1 blank and summarizes Zone 7's base year information and water supply availability in Table 7-2 and Table 7-3, respectively.

**Table 7-1. Basis of Water Year Data (Reliability Assessment) (DWR Table 7-1 Retail)**

| | |
|---|---|
| ☑ | Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP.<br>Location: Tables 7-2 and 7-3 |

**Table 7-2. Basis of Water Year Data for Zone 7 Supplies**

| Water Source | Normal Year | Single Dry Year | Five-Year Drought | | | | |
|---|---|---|---|---|---|---|---|
| | | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| SWP – Table A | 1965 | 2014 | 1987 | 1988 | 1989 | 1990 | 1991 |
| SWP – Carryover | 1965 | 2014 | 1987 | 1988 | 1989 | 1990 | 1991 |
| Water Transfers | 1965 | 2014 | 1987 | 1988 | 1989 | 1990 | 1991 |
| Arroyo Valle | 1919 | 1977 | 1987 | 1988 | 1989 | 1990 | 1991 |
| Sites Reservoir | 1965 | 2014 | 1987 | 1988 | 1989 | 1990 | 1991 |
| BARDP and/or Potable Reuse | 1965 | 2014 | 1987 | 1988 | 1989 | 1990 | 1991 |
| From Storage | | | | | | | |
| Main Basin | 1965 | 2014 | 1987 | 1988 | 1989 | 1990 | 1991 |
| Semitropic | 1965 | 2014 | 1987 | 1988 | 1989 | 1990 | 1991 |
| Cawelo | 1965 | 2014 | 1987 | 1988 | 1989 | 1990 | 1991 |
| Chain of Lakes | 1965 | 2014 | 1987 | 1988 | 1989 | 1990 | 1991 |

*Source: Zone 7 2020 UWMP, Table 7-1 through Table 7-9*

**Table 7-3. Zone 7's Water Supply Volume Available[a]**

| Water Source | Normal Year | Single Dry Year | Five-Year Drought | | | | |
|---|---|---|---|---|---|---|---|
| | | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| SWP – Table A[b] | 43,500 | 4,000 | 16,900 | 8,100 | 54,000 | 10,500 | 16,100 |
| SWP – Carryover[c] | 10,000 | 15,500 | 15,500 | 2,800 | 1,800 | 1,800 | 1,800 |
| Water Transfers[d] | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 |
| Arroyo Valle | 5,500 | 0 | 1,700 | 1,500 | 1,500 | 1,500 | 1,500 |
| Sites Reservoir[e] | 10,000 | 15,300 | 16,800 | 17,700 | 16,300 | 15,900 | 15,800 |
| BARDP and/or Potable Reuse[f] | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 |
| From Storage | | | | | | | |
| Main Basin[g] | 29,200 | 27,600 | 27,600 | 25,100 | 20,600 | 15,100 | 9,700 |
| Semitropic[h] | 13,000 | 6,500 | 10,000 | 10,000 | 10,000 | 10,100 | 10,100 |
| Cawelo[h] | 9,700 | 7,100 | 9,700 | 9,700 | 9,700 | 9,700 | 9,700 |
| Chain of Lakes[i] | 10,100 | 8,300 | 8,800 | 7,900 | 6,900 | 6,000 | 5,200 |
| **Total** | **141,000** | **94,300** | **117,000** | **92,800** | **130,800** | **80,600** | **79,900** |
| **Percent of Normal** | **100%** | **66.9%** | **83.0%** | **65.8%** | **92.8%** | **57.2%** | **56.7%** |

*Source: Zone 7 2020 UWMP, Table 7-1 through Table 7-9*

(a) Yields are shown in AFY.
(b) Based on 2040 future SWP reliability Table A allocations.
(c) Zone 7's operational target is typically 10,000 AF for normal years.
(d) Zone 7 is pursuing water transfer agreements for the period through 2030. Amounts may vary from year-to-year, but variability has not been quantified.
(e) Supplies from Sites Reservoir are assumed to be available by 2030.
(f) Supplies from these sources are assumed to be available by 2030.
(g) These are estimated available supplies, not necessarily what would be pumped. Zone 7's typical operational target is around 9,200 AF for normal years.
(h) Semitropic and Cawelo available supplies are typically not used during normal years.
(i) The Chain of Lakes Pipeline, which provides access to water stored in the Chain of Lakes, is assumed to be completed around 2025. Water stored in the Chain of Lakes is assumed to be available by 2030 and would not be used during normal years.

## 7.1.3 Water Service Reliability

This section presents comparisons of projected water supplies and demands from 2025 through 2045 under the following hydrologic conditions: normal year, single dry year, and five consecutive dry years. The City's projected demands are presented in Chapter 4, while supply sources are described in Chapter 6. Unless otherwise noted, it is assumed demand projections will not change with hydrologic conditions. In other words, demands are assumed to be unconstrained unless they are limited by available supplies.

### *7.1.3.1 Water Service Reliability – Normal Year*

The City's normal year supplies include:

- Purchased supplies from Zone 7
- 3,500 AFY of groundwater pumped by the City from the Main Basin
- Between 1,500 and 1,800 AFY of recycled water

Table 7-4 shows that in normal years, the City's supplies are adequate to meet projected demands.

**Table 7-4. Normal Year Supply and Demand Comparison (DWR Table 7-2 Retail)**

| | 2025 | 2030 | 2035 | 2040 | 2045 *(Opt)* |
|---|---|---|---|---|---|
| Supply totals *(autofill from Table 6-9)* | 18,240 | 18,889 | 19,387 | 20,036 | 20,036 |
| Demand totals *(autofill from Table 4-3)* | 18,240 | 18,889 | 19,387 | 20,036 | 20,036 |
| Difference | 0 | 0 | 0 | 0 | 0 |
| NOTES: Volumes are in AF. Table references refer to DWR table numbers. | | | | | |

### *7.1.3.2 Water Service Reliability – Single Dry Year*

In Chapter 7 of its 2020 UWMP, Zone 7 has indicated it can meet retailer demands during single dry years through 2045. Therefore, Zone 7 supplies to the City are assumed to equal the City's projected potable water demands after accounting for the City's GPQ. Recycled water supply is assumed to be unaffected by the dry condition. Table 7-5 shows that the City's supplies are adequate to meet projected demands during single dry years.

**Table 7-5. Single Dry Year Supply and Demand Comparison (DWR Table 7-3 Retail)**

| | 2025 | 2030 | 2035 | 2040 | 2045 (Opt) |
|---|---|---|---|---|---|
| Supplies | | | | | |
| Zone 7 | 13,240 | 13,739 | 14,237 | 14,736 | 14,736 |
| Groundwater | 3,500 | 3,500 | 3,500 | 3,500 | 3,500 |
| Recycled Water | 1,500 | 1,650 | 1,650 | 1,800 | 1,800 |
| Supply totals | 18,240 | 18,889 | 19,387 | 20,036 | 20,036 |
| Demands | | | | | |
| Potable Water | 16,740 | 17,239 | 17,737 | 18,236 | 18,236 |
| Recycled Water | 1,500 | 1,650 | 1,650 | 1,800 | 1,800 |
| Demand totals | 18,240 | 18,889 | 19,387 | 20,036 | 20,036 |
| Difference | 0 | 0 | 0 | 0 | 0 |
| NOTES: Volumes are in AF. | | | | | |

### *7.1.3.3 Water Service Reliability – Five Consecutive Dry Years*

In Chapter 7 of its 2020 UWMP, Zone 7 has indicated it can meet retailer demands during five-year droughts beginning in 2025, 2030, 2035, 2040 and 2045. Therefore, Zone 7 supplies to the City are assumed to equal the City's projected potable water demands after accounting for the City's GPQ, which is expected to remain at 3,500 AFY in each year of a five-year drought. Recycled water supplies are also assumed to be unaffected by dry conditions.

Table 7-6 shows that the City's supplies are adequate to meet projected demands during five-year droughts through the planning period. For interim years (e.g., 2021-2024, 2026-2029), potable and recycled water demands are linearly interpolated between the values shown in Table 7-5.

**Table 7-6. Multiple Dry Years Supply and Demand Comparison (DWR Table 7-4 Retail)**

| | | 2025* | 2030* | 2035* | 2040* | 2045* (Opt) |
|---|---|---|---|---|---|---|
| First year | Supply totals | 18,240 | 18,889 | 19,387 | 20,036 | 20,036 |
| | Demand totals | 18,240 | 18,889 | 19,387 | 20,036 | 20,036 |
| | Difference | 0 | 0 | 0 | 0 | 0 |
| Second year | Supply totals | 18,370 | 18,988 | 19,517 | 20,036 | 20,036 |
| | Demand totals | 18,370 | 18,988 | 19,517 | 20,036 | 20,036 |
| | Difference | 0 | 0 | 0 | 0 | 0 |
| Third year | Supply totals | 18,499 | 19,088 | 19,647 | 20,036 | 20,036 |
| | Demand totals | 18,499 | 19,088 | 19,647 | 20,036 | 20,036 |
| | Difference | 0 | 0 | 0 | 0 | 0 |
| Fourth year | Supply totals | 18,629 | 19,188 | 19,776 | 20,036 | 20,036 |
| | Demand totals | 18,629 | 19,188 | 19,776 | 20,036 | 20,036 |
| | Difference | 0 | 0 | 0 | 0 | 0 |
| Fifth year | Supply totals | 18,759 | 19,287 | 19,906 | 20,036 | 20,036 |
| | Demand totals | 18,759 | 19,287 | 19,906 | 20,036 | 20,036 |
| | Difference | 0 | 0 | 0 | 0 | 0 |
| ***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.* | | | | | | |
| NOTES: Volumes are in AF and include both recycled and potable water. | | | | | | |

## 7.1.4 Water Management Tools and Options

The City and Zone 7 coordinate to increase regional supply reliability and reduce reliance on water imports. The City focuses on demand reduction, specifically prioritizing water conservation and encouraging recycled water use. Zone 7 supports these efforts by the City while also evaluating new supply options (including potable reuse and brackish water desalination) and optimizing and expanding local storage.

In addition, Zone 7 is a member of the Bay Area Regional Reliability (BARR) partnership, which brings together eight Bay Area water agencies to improve regional water supply reliability. Besides Zone 7, these agencies include ACWD, SFPUC, the Bay Area Water Supply and Conservation Agency (BAWSCA), CCWD, EBMUD, Marin Municipal Water District (MMWD), and VW. The BARR partners have agreed to work cooperatively to address water supply reliability concerns and drought preparedness on a mutually beneficial and regionally focused basis. Near- and long-term joint water supply reliability projects may be evaluated through BARR, such as use of the capacity of existing facilities, changes to infrastructure (including new interties, recycled water, water conservation, expanded treatment, regional desalination, and water transfers and exchanges), and other projects or institutional arrangements that encourage a regional approach to achieving water supply reliability in the Bay Area.

As part of its existing CIP, Zone 7 is planning to construct a reliability intertie with another major water agency (e.g., EBMUD or SFPUC) to help mitigate some of the risk during a major water supply interruption from the Delta and to create opportunities for transfers/exchanges. This intertie could allow Zone 7 to acquire emergency water supplies to help meet minimum health and safety water supply needs during a major Delta outage, assuming the partnering agency has available supply and the transmission capacity available during the emergency period. A conceptual 24- to 30-inch diameter intertie with EBMUD could connect to the west side of Zone 7's transmission system and convey up to 10 to 15 MGD of supply. Additional wells would also increase access to local groundwater and improve its management, while a new booster pump station would improve conveyance of groundwater across the Tri-Valley. The new Chain of Lakes Pipeline would allow for access to water stored locally in the Chain of Lakes.

# 7.2 DROUGHT RISK ASSESSMENT

In accordance with CWC Section 10612, urban water suppliers must conduct a DRA, which evaluates the risk of a severe drought occurring for the next five consecutive years (2021-2025). Supply conditions for the DRA are based on the five driest consecutive years on record, with adjustments to consider plausible changes in climate, regulations, and other locally applicable criteria.

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

## 7.2.1 Data, Methods, and Basis for Water Shortage Condition

The water shortage condition for the DRA is the same as the five-year drought presented in Section 7.1.2. Since the DRA can be updated outside of the five-year UWMP cycle, a summary of the data and basis for the water shortage condition is provided in this section.

As presented in Chapter 7 of Zone 7's 2020 UWMP, the DRA assumes 5, 11, 60, 13, and 25 percent Table A allocations for 2021-2025, respectively. Data for 2021 reflect current projected available supplies, while the last four years reflect the last four years of the multiple-dry year scenario previously discussed. Zone 7's supply projections are based on existing facilities and the expected availability of supplies from various sources given the constraints previously described.

## 7.2.2 DRA Water Source Reliability

Table 7-7 summarizes Zone 7's available supplies for each year of the DRA. In addition to potable water supplies from Zone 7, the City is expected to produce 3,500 AFY of groundwater in each year of the drought. For the DRA, recycled water supplies are assumed to be sufficient to meet recycled water demands.

**Table 7-7. Projected Zone 7 Supplies for Drought Risk Assessment**

| Supply Source | Available Supply, AFY | | | | |
|---|---|---|---|---|---|
| | 2021 | 2022 | 2023 | 2024 | 2025 |
| SWP Table A[(a)] | 4,000 | 8,900 | 48,400 | 10,500 | 20,200 |
| SWP Carryover | 8,900 | 10,300 | 9,600 | 12,800 | 9,900 |
| Water Transfers[(b)] | 10,000 | 6,000 | 5,000 | 6,000 | 8,000 |
| Arroyo Valle[(c)] | 700 | 700 | 6,900 | 6,900 | 2,700 |
| Main Basin | 13,200 | 13,200 | 11,000 | 10,000 | 11,000 |
| Semitropic | 9,100 | 9,100 | 0 | 9,100 | 9,100 |
| Cawelo | 10,000 | 10,000 | 0 | 5,000 | 1,900 |
| **Total** | **55,900** | **58,200** | **80,900** | **60,300** | **62,800** |

(a) Assumes 5, 11, 60, 13, and 25 percent Table A allocations from 2021 through 2025, respectively. 2021 reflects current projected available supplies, while 2022 through 2025 reflect the last four years of a multiple-dry year scenario.
(b) Includes Yuba Accord transfers.
(c) Includes carryover and current year's yield.

## 7.2.3 Total Water Supply and Use Comparison

In Chapter 7 of its 2020 UWMP, Zone 7 has indicated it can meet retailer demands during a five-year drought beginning in 2021. Therefore, Zone 7 supplies are assumed to equal the City's projected potable water demands after accounting for the City's GPQ (3,500 AFY). Recycled water demands were estimated by linearly interpolating between actual 2020 use and projected demands for 2025.

As shown in Table 7-8, during a five-year drought beginning in 2021, the City's supplies are adequate to meet projected demands through 2025, even without water conservation. However, the City may still prioritize water conservation under such drought conditions to reduce demand and conserve supply for potentially future dry years.

**Table 7-8. Five-Year Drought Risk Assessment Tables to Address Water Code Section 10635(b) (DWR Table 7-5)**

| 2021 | Total |
|---|---|
| Total Water Use | 16,528 |
| Total Supplies | 16,528 |
| Surplus/Shortfall w/o WSCP Action | 0 |
| **Planned WSCP Actions** (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 0 |
| Resulting % Use Reduction from WSCP action | 0% |

| 2022 | Total |
|---|---|
| Total Water Use | 17,577 |
| Total Supplies | 17,577 |
| Surplus/Shortfall w/o WSCP Action | 0 |
| **Planned WSCP Actions** (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 0 |
| Resulting % Use Reduction from WSCP action | 0% |

| 2023 | Total |
|---|---|
| Total Water Use | 17,801 |
| Total Supplies | 17,801 |
| Surplus/Shortfall w/o WSCP Action | 0 |
| **Planned WSCP Actions** (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 0 |
| Resulting % Use Reduction from WSCP action | 0% |

| 2024 | Total |
|---|---|
| Total Water Use | 18,016 |
| Total Supplies | 18,016 |
| Surplus/Shortfall w/o WSCP Action | 0 |
| **Planned WSCP Actions** (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 0 |
| Resulting % Use Reduction from WSCP action | 0% |

| 2025 | Total |
|---|---|
| Total Water Use | 18,240 |
| Total Supplies | 18,240 |
| Surplus/Shortfall w/o WSCP Action | 0 |
| **Planned WSCP Actions** (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 0 |
| Resulting % Use Reduction from WSCP action | 0% |

# CHAPTER 8
# Water Shortage Contingency Plan

This chapter summarizes the City's WSCP, seismic risk to City facilities, and WSCP adoption procedures. To allow for WSCP updates to be made outside of the UWMP preparation process, the City's WSCP is included in this plan as Appendix K.

## 8.1 WATER SHORTAGE CONTINGENCY PLANNING BACKGROUND

Water shortages occur whenever the available water supply cannot meet the normally expected customer water use. This can be due to several reasons, including significant population growth, climate change, drought, and catastrophic events. Drought, regulatory actions, and natural and manmade disasters may occur at any time. A WSCP presents how an urban water supplier plans to respond to a water shortage condition and helps prevent catastrophic service disruptions.

The 2018 Water Conservation Legislation set new requirements for water shortage contingency planning; the City's WSCP has been updated to be consistent with these requirements.

## 8.2 CITY WATER SHORTAGE CONTINGENCY PLAN

The City's WSCP describes its strategic plan for preparing and responding to water shortages. The WSCP includes water shortage stages and associated shortage response actions, as well as the City's legal authorities, communication protocols, compliance and enforcement, and monitoring and reporting.

The City's WSCP is included in this plan as Appendix K to allow for updates outside of the UWMP preparation process. The City intends for its WSCP to be dynamic, so that it may assess response action effectiveness and adapt to foreseeable and unforeseeable events. When an update to the WSCP is proposed, the revised WSCP will undergo the process described in Section 8.4.

## 8.3 SEISMIC RISK ASSESSMENT AND MITIGATION PLAN

CWC §10632.5(a) requires that UWMPs include a seismic risk assessment and mitigation plan to assess and mitigate a water system's seismic vulnerabilities. A Local Hazard Mitigation Plan (LHMP) may be incorporated in this UWMP to meet this requirement if they address seismic risk. In coordination with Livermore and the City of Dublin (Dublin), the City developed a regional LHMP, which, among other hazards, addresses seismic risks for water infrastructure. The *2018 Tri-Valley Local Hazard Mitigation Plan* (2018 LHMP) was adopted by Livermore, Dublin, and the City during the summer of 2018. It is available on the City's website[21], and is incorporated into this UWMP by reference. The Federal Emergency Management Agency (FEMA) found the 2018 LHMP in conformance with Title 44 Code of Federal Regulations Part 201.6 Local Mitigation Plans.

[21] Tetra Tech, 2018. *Tri-Valley Local Hazard Mitigation Plan*. http://www.cityofpleasantonca.gov/gov/depts/cd/planning/plans_n_programs/tri_valley_hazard_mitigation_plan.asp

Earthquakes are common, relatively well-tracked, and studied in California. While California experiences hundreds of earthquakes each year, most are below 3.0 on the Richter Scale (i.e., magnitude 3.0) and cause minimal damage. The United States Geological Survey (USGS) roughly defines strong earthquakes (which can cause moderate damage to structures) as measuring greater than 5.0 on the Richter Scale, while major earthquakes measure more than 7.0 on the Richter Scale. In California, strong earthquakes occur every two to three years, and major earthquakes occur once a decade.

The Calaveras, Greenville, Hayward, and Mt. Diablo faults are in the vicinity of the Tri-Valley region. A 2016 report[22] by the USGS estimated the probabilities for magnitude-6.7 (or larger) earthquakes on major fault lines in the San Francisco Bay Area by the year 2043. The Hayward Fault has a 33 percent chance of one or more earthquakes of magnitude-6.7 or larger by 2043, while the Calaveras Fault has a 26 percent chance of one or more such earthquakes in that timeframe. The Greenville and Mt. Diablo faults each have a 16 percent chance of one or more earthquakes of magnitude-6.7 or larger by 2043.

The 2018 LHMP evaluated the impact of earthquakes on critical facilities and infrastructure using a Hazus analysis. Results for utilities infrastructure (including water system facilities) are presented in terms of level of damage and time to return to functionality. There are five damage levels (no damage, slight damage, moderate damage, extensive damage, and complete damage) and six time increments (1, 3, 7, 14, 30, and 90 days). Results are categorized by earthquake location; there are separate scenarios for earthquakes on each of the Calaveras, Greenville, Hayward, Mt. Diablo, and San Andreas faults.

According to the 2018 LHMP, earthquakes on the Hayward and Calaveras faults would be most significant. In its earthquake analysis, the 2018 LHMP identified 120 critical utility facilities (i.e., providing water, electricity, and communications service) in the Tri-Valley region. Over 80 percent of utility facilities would experience at least moderate damage for an earthquake on the Hayward Fault, while approximately 44 percent would be at least moderately damaged by a Calaveras Fault earthquake. For earthquakes on the other faults analyzed (Greenville, Mt. Diablo, San Andreas), this number is below 15 percent. Seven days after an earthquake on the Hayward Fault, one of these facilities has an approximately 52 percent chance of being fully functional. This increases to approximately 84 percent for an earthquake on the Calaveras Fault and above 92 percent for earthquakes on the Greenville, Mt. Diablo, and San Andreas faults.

Table 18-3 of the 2018 LHMP summarizes alternatives for mitigating the earthquake hazard on personal, corporate, and government scales. Mitigation options potentially applicable to the City include the following:

- Locate critical facilities outside hazard area where possible
- Harden infrastructure
- Provide redundancy for critical functions
- Include retrofitting and replacement of critical system elements in capital improvement plan
- Warehouse critical infrastructure components such as pipe materials
- Develop and adopt a continuity of operations plan

[22] U.S. Geological Survey (USGS), 2016. *Earthquake Outlook for the San Francisco Bay Region 2014-2043*. https://pubs.usgs.gov/fs/2016/3020/fs20163020.pdf

The City has implemented efforts in addressing its facilities' seismic vulnerabilities. In accordance with America's Water Infrastructure Act (AWIA), the City completed a Risk and Resilience Assessment (RRA) of its water system in December 2020. The RRA systematically evaluated the City's assets, threats, and risks, as well as countermeasures that might be implemented to minimize overall risk to the system. To ensure the security of the City's water system, the RRA is retained by the City as a confidential document.

## 8.4 WATER SHORTAGE CONTINGENCY PLAN ADOPTION, SUBMITTAL, AND AVAILABILITY

This WSCP (Appendix K) is adopted concurrently with the City's 2020 UWMP, by separate resolution. A copy of the resolution is included in Appendix L. Prior to adoption, a duly noticed public hearing was conducted. A copy of the WSCP will be submitted to DWR within 30 days of adoption.

No later than 30 days after submittal to DWR, copies of this WSCP will be available at the City's Operations Service Center and the Pleasanton Public Library. Copies will also be provided to Alameda County and Zone 7. An electronic copy of the WSCP will also be available for public review and download on the City's website.

The City's WSCP is an adaptive management plan and is subject to refinements as needed to ensure that the City's shortage response actions and mitigation strategies are effective and produce the desired results. When a revised WSCP is proposed, the revised WSCP will undergo the process described in this section for adoption by the City Council and distribution to Alameda County, Zone 7, and the general public.

# CHAPTER 9
# Demand Management Measures

The City implements demand management measures (DMMs) to sustainably manage its water resources. If not mitigated, an increase in water demand and/or changes in water supplies due to climate change and other factors reduce water reliability. Implementing DMMs can help improve water service reliability and help meet City and State water conservation goals. This chapter describes the City's historical and existing water conservation program, status of DMMs, and projected future implementation of water conservation measures.

In previous UWMPs, a substantial amount of data was 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. Focus turned away from detailed descriptions of each of the fourteen DMMs and turned to key water conservation measures that are being implemented to achieve SB X7-7 water use targets. For retail agencies like the City, the number of DMMs was reduced from fourteen to six (plus an "other" category). A narrative description of the status of the DMMs and how the DMMs help the water supplier achieve its water efficiency goals are required. Detailed data are not required.

## 9.1 WATER CONSERVATION PROGRAM OVERVIEW

The City has long been committed to reducing the demand for potable water through conservation and has recently implemented a recycled water program to offset potable water demands. The City's customers have responded positively to these conservation programs. In this chapter, narrative descriptions addressing the nature and extent of each DMM implemented over the past five years (2016-2020) are provided. Planned or continued implementation of each of the DMMs are also discussed.

The City's SB X7-7 per capita water use target for 2020 was confirmed to be 197 GPCD in its 2015 UWMP. The DMMs that the City has implemented have allowed it to meet its target. As shown in Chapter 5, the City's overall per capita water use in 2020 was 159 GPCD.

## 9.2 EXISTING DEMAND MANAGEMENT MEASURES FOR RETAIL SUPPLIERS

The City is required to provide a description of the DMM's associated with the following:

- Water waste prevention ordinances
- Metering
- Conservation pricing
- Public education and outreach
- Programs to assess and manage distribution system real loss
- Water conservation program coordination and staffing support

The City is also required to describe any other DMMs it has implemented that have had significant impact on water use.

This section describes existing water conservation programs and those planned to be implemented in the future. For each DMM, the current program is described, followed by a description of how the DMM was implemented over the previous five years and future implementation plans.

The City anticipates continuing and possible expansion of its water conservation program to meet the upcoming new legislative regulatory requirements under the *Making Water Conservation a California Way of Life* plan currently under development.

## 9.2.1 Water Waste Prevention Ordinances

### *9.2.1.1 DMM Description*

The City prohibits water waste within its service area, as defined by PMC §14.04.060 with permanent wasteful water use violations of water service. In 1991, the City approved Ordinance No. 1508, which added Chapter 9.30 of the PMC and established water conservation stages and prohibitions to prevent water waste. In March 2014, City Council approved a significant update to PMC Chapter 9.30, which updated the definitions of water shortage stages with associated levels of water rationing, the expected water conservation measures under each stage, and prohibitions of wasteful water use when the chapter is in effect.

A water shortage emergency can be declared by either the City Manager or by resolution of the City Council. As described in Chapter 8, a water shortage can expand the City's water use restrictions, depending on the shortage stage as defined in the City's Water Management Plan.

### *9.2.1.2 Implementation over the Past Five Years to Achieve Water Use Targets*

To protect and preserve the community water supply, eliminating water waste is always essential, regardless of the water supply level. Therefore, PMC Chapter 14.04 defines wasteful water use as violations of water service. To incorporate the importance of recycled water as an alternative to landscape irrigation service within the City's recycled water distribution system, PMC Section 14.04.060 was updated in February 2018 to include a new definition of water waste: use of potable water for outdoor landscaping through a dedicated irrigation meter within the City's recycled water use area. The City's current definitions of water waste include:

1. Use of potable water between 9:00 a.m. and 6:00 p.m. to irrigate grass, lawns, groundcover, shrubbery, crops, vegetation, and trees, with the exception of hand watering and drip irrigation.
2. The application of potable water to outdoor landscaping in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots or structures.
3. Use of potable water to irrigate outdoor landscaping during and within 48 hours after measurable rainfall.
4. Use of potable water to wash down sidewalks, walkways, driveways, parking lots, open ground or other hard surface areas by the direct application of water thereto, unless needed for health or safety reasons.
5. Use of potable water in non-recirculating decorative ponds, fountains and other water features, with the exception of child water-play features.
6. Allowing potable water to escape from breaks within the person or consumer's plumbing system for more than eight hours after the person or consumer is notified or discovers the break.

7. Use of potable water for outdoor landscaping through a dedicated irrigation meter within the City's recycled water use area unless exempted by the director of operations and water utilities for existing water customers, or City Engineer for new development.

In addition to the above water waste prohibitions, the City expanded water conservation regulations in a June 2016 update to PMC Chapter 9.30 (Water Management Plan). To protect water resources, these additional regulations apply even during normal supply conditions and include:

8. The use of potable water for washing vehicles and/or machinery from a hose equipped with a shutoff nozzle is permitted as long as water does not enter the storm drain system.
9. Reduce other interior or exterior uses of water to minimize or eliminate excessive runoff or waste.
10. Restaurants shall serve water to their customers only when specifically requested.
11. Operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. The hotel or motel shall prominently display notice of this option in each guestroom using clear and easily understood language.
12. The use of water for construction activities should utilize recycled water, rather than potable water. Such use shall occur in a manner that does not result in runoff or illicit discharge into the storm drain system.
13. Commercial power washing should utilize recycled water, in a manner that does not result in water discharging into the storm drain system.
14. Pools should remain covered when not in use to prevent evaporation, and should be equipped with recirculating pump(s).
15. The use of potable water in non-recirculatory ponds, fountains, and other decorative water features is prohibited.

#### *9.2.1.3 Plans for Continued Implementation*

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

## 9.2.2 Metering

#### *9.2.2.1 DMM Description*

All known water connections within the City's service area are metered, and all customer sectors are billed by volume of use, as discussed in Section 9.2.3.

Between 2016 and 2017, the City implemented an Advanced Metering Infrastructure (AMI) project, which included replacing most small and large water meters. To date, the AMI project converted 96.8 percent of the City's 22,369 meters to an Aclara AMI system. Following installation, the City performed an audit investigation to verify meter read validity from the new AMI system. The AMI project increased meter accuracy due to the replacement of older meters that naturally decline in performance over time.

The City plans to convert the approximately 700 remaining non-AMI meters to AMI over the next 5 years. The final conversion poses some challenges because most of the non-AMI meters are located in areas difficult to reach with a fixed base radio data collection system. Also, as funding allows, meters are replaced within the system based on their service length, with the oldest meters receiving replacement priority.

The City continues to monitor water meters for accuracy through unusual consumption trends in the billing software and AMI reporting. Meters that are stuck or are showing high degrees of variability are flagged for inspection and/or replacement.

#### *9.2.2.2 Implementation over the Past Five Years to Achieve Water Use Targets*

In 2017, following the citywide meter replacement and the implementation of the AMI system, the City launched a customer water portal that allows customers to view their hourly water usage in near real time, as well as sign up to receive automated potential leakage notifications when the system detects continuous consumption over a specific threshold of time. For customers not receiving potential leakage notifications (including those not registered on the portal), water conservation staff reviews AMI reports on a weekly basis to identify meters showing constant consumption. Customers with meters exceeding a specific threshold are sent notification by email, phone, or regular mail.

#### *9.2.2.3 Plans for Continued Implementation*

Implementation of this DMM is ongoing and expected to help the City achieve its water use targets by providing accurate and timely water use information to the customer and the City. It also helps customers make informed decisions about their water consumption. Future plans include continued customer outreach on the availability of the customer water portal to receive automatic alerts of potential leaks, as well as continued customer education on how to use the water portal to view and keep track of customer water use.

## 9.2.3 Conservation Pricing

#### *9.2.3.1 DMM Description*

The City's water rate structure encourages conservation by incorporating a volumetric charge in addition to the fixed meter charge. Consequently, water usage reductions directly reduce cost to the metered customer, while excessive water use results in increased costs. Lastly, to encourage recycled water use, the City's recycled water rate is set at 90 percent of the potable water irrigation rate.

#### *9.2.3.2 Implementation over the Past Five Years to Achieve Water Use Targets*

##### 9.2.3.2.1 Potable Water Rates

The City's potable water rates include a fixed meter charge based on the size of the water meter and a consumption charge based on the quantity of water used. The City has billed single-family residential customers based on an inclining block rate structure since 1980. Potable water rates include the following components: Zone 7 water costs, distribution costs, a recycled water surcharge, and capacity expansion costs. The City's current water rates are available on the City's website: www.cityofpleasantonca.gov, under Government/Operations Services/Customer Service/Utility Billing.

The Zone 7 water rate is provided to the City and is a direct pass through to the City's customers. The City does not determine this rate, which is subject to change at least each January 1. The fixed meter charge and the distribution charges are subject to annual consumer price index changes effective January 1, and the Zone 7 rate is subject to changes by the Zone 7 Board.

#### 9.2.3.2.2 Recycled Water Rates

As described in previous chapters of this 2020 UWMP, the City purchases and delivers recycled irrigation water to commercial customers in various areas within its service area. The City is in the process of expanding its recycled water system to expand irrigation service. Recycled water rates are available on the City's website (www.cityofpleasantonca.gov) and are based on the costs associated with providing recycled water service, purchases from DERWA and Livermore, and delivering water through its distribution system.

The City's recycled water rate is set at 90 percent of the potable irrigation rate. As potable water rates are adjusted based on changes in the annual Consumer Price Index (CPI) and in Zone 7's wholesale water rates, the recycled water rate will adjust to remain at 90 percent of the potable irrigation water rate. Each December, customers will be notified of the rate that will be effective January 1 of the following year.

### *9.2.3.3 Plans for Continued Implementation*

Implementation of this DMM is ongoing and 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

### *9.2.4.1 DMM Description*

The City has been actively involved in providing the community with information and education on the value of water and water conservation for many years. This includes participating at local events, such as green fairs, corporate fairs, school events and farmers markets, hosting and co-hosting water-wise workshops, and meeting with business leaders and corporate green teams to discuss and answer questions on water efficiency. Brochures, handouts, model displays, and general discussion are offered during events to the general public.

The City is part of the Tri-Valley Water Conservation Task Force, which promotes the WaterSense program's "Fix a Leak Week" campaign each year to raise awareness of water leaks inside the home and the amount of water wasted from such leaks each year. During Fix a Leak Week, Zone 7 and the local water retailers encourage customers to fix common leaks (faucets, toilets and showerheads) and educate the public on the value of water efficiency and the meaning of the WaterSense label.

The City's Water Conservation Program provides guidance to internal staff to ensure effective communication with the public on matters of water conservation and programs that are available to the public to increase water efficiency. Water conservation programs include high-efficiency washer rebates, water efficient landscape rebates, weather-based irrigation controller rebates, water-efficient irrigation rebates for irrigation customers, and controller assistance program service visits. These programs are discussed in more detail in Section 9.2.7.

#### 9.2.4.2 Implementation over the Past Five Years to Achieve Water Use Targets

As detailed in Section 9.2.2.1, between 2016 and 2017 the City prioritized the implementation of AMI with interconnection to a customer water portal. Since these systems were implemented, an important part of the City's Water Conservation outreach efforts has included educating customers on how to use the customer water portal to monitor their water use and sign up for automatic leak notifications. This allows customers to investigate for potential leaks quickly, greatly reducing their water use through unknown leaks.

In addition, Water Conservation staff works with the City's Public Information Officer to post seasonal water efficiency messaging on social media platforms and the City's website. The City's main water conservation website (PleasantonWaterConservation.com) provides water customers with water efficiency information and upcoming events and learning opportunities on water efficiency.

In response to the COVID-19 pandemic in 2020, in-person outreach events were canceled. Some events transitioned to virtual platforms, including Gardening with Natives, a joint-hosted event between Zone 7 and other Zone 7 retailers, and water-efficiency trainings conducted by the Bay Area Water Supply and Conservation Agency.

#### 9.2.4.3 Plans for Continued Implementation

Implementation of this DMM is ongoing and 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

#### 9.2.5.1 DMM Description

The City measures water pressure at entry points (i.e., turnouts and groundwater wells) and booster stations within its distribution system. Tank levels are also measured within the distribution system. All measurements are continuously monitored by the City's Supervisory Control and Data Acquisition (SCADA) system to indicate any unusual activity or trends that could indicate water loss. Identified distribution system leaks are repaired by trained staff who are available 24 hours a day.

#### 9.2.5.2 Implementation over the Past Five Years to Achieve Water Use Targets

As described in Chapter 4 of this plan, the City conducts an annual audit of production versus consumption to determine water losses (see Appendix F). The City's calendar year 2020 audit is in progress, but water loss estimated from production and billing data was approximately 8.8 percent.

#### 9.2.5.3 Plans for Continued Implementation

The City will continue to perform water system audits, the accounting of water losses vs. system input, and leak detection programs. Water system audits and leak detection activities are performed on an ongoing, year-round basis.

Implementation of this DMM is expected to help the City achieve its water use targets and comply with future water loss standards by quickly identifying sources of water loss so repairs can be made and losses minimized.

## 9.2.6 Water Conservation Program Coordination and Staffing Support

### *9.2.6.1 DMM Description*

Since the 1990s, the City has staffed one to two temporary, 1,000-hour and/or 1,500-hour water conservation interns or assistants. This position devotes 100 percent of their time to water conservation. In 2011, the City hired a half-time Water Conservation Manager. Duties performed by the Water Conservation Manager include:

- Coordination and oversight of conservation programs
- Coordination of joint programs with Zone 7, the retailers, and outside agencies
- Communication of water conservation issues to management
- Preparation and submittal of reports to various parties
- Preparation and updates of water conservation plan

In 2015, a full-time Water Conservation Technician was also added to assist with the above activities, as well as provide irrigation surveys to customers. The Water Conservation Technician is also a certified cross-connection specialist and provides coverage testing and cross connection testing assistance to irrigation customers converting to recycled water. Recently, to reflect the incorporation of the water conservation and recycled water programs under the Environmental Services Division, a new position classification was developed and approved, Environmental Services Specialist (ESS), which assumes the same responsibilities as the Water Conservation Technician classification, as well as additional environmental compliance functions. Two ESS positions will now provide support to the City's water conservation and recycled water programs to address the transition of the Water Conservation Manager to the Environmental Services Manager, following the recent Environmental Services Division reorganization.

Additional City staff are also responsible for DMM program implementation. Customer Service Center staff provide general water conservation program information to customers and refers customers to Water Conservation Program staff for further assistance with water rebates and other water conservation programs. The Managing Director of Utilities and Environmental Services is responsible for the managing oversight of the following: system water audits, leak detection, and repair; metering with commodity rates for all new connections and retrofit of existing connections; and participates in conservation pricing.

### *9.2.6.2 Implementation over the Past Five Years to Achieve Water Use Targets*

Following departmental strategic planning, in 2018 the Environmental Services Division (ESD) was formed within the City's Operations Services Department. Staff supporting Water Conservation, Recycled Water regulations, and Environmental Compliance all fall under the ESD. The Environmental Services Manager directly oversees each of these areas. The integration between these programmatic areas helps to ensure recycled water inclusion into the City's overall water conservation strategy, as well as the integration of public outreach education interconnection between the conservation of water and clean water program.

### *9.2.6.3 Plans for Continued Implementation*

Implementation of this DMM is ongoing and 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 among City employees.

## 9.2.7 Other Demand Management Measures

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

- Water-Efficient Landscape Program
- Controller Assistance Program
- Free indoor Water-efficient Device Program
- Free water Conservation Lavatory Signs
- Rebate Programs
- Recycled Water Program

These programs have all been active within the last five years and help the City achieve its water use targets by incentivizing customers to increase water efficiency. Each program is described below.

### *9.2.7.1 Water-Efficient Landscape Program*

The City offers $0.25 per square foot to residential customers and $0.50 per square foot to irrigation customers who replace existing front lawns or sidewalk visible lawns with water-efficient, drought tolerant landscaping. This rebate program can be combined with Zone 7's Water-Efficient Lawn Conversion Rebate, such that customers can get up to $1,000 (Residential) or $5,500 (Commercial/ Irrigation) by participating in both programs.

Irrigation meter customers participating in the City's Water-Efficient Landscape Program are eligible for rebates towards qualifying water efficient irrigation equipment utilized on the converted landscape area. Refer to Section 9.2.7.5.2 for details.

### *9.2.7.2 Controller Assistance Program*

The City offers free controller assistance visits to residential and non-residential water customers. This service includes a walkthrough site/irrigation system evaluation of the customer's property and irrigation controller programming assistance. The Controller Assistance Program is open to all water customers with landscaping that are responsible for the property water bill.

In response to the COVID-19 crisis, in 2020 the Controller Assistance Program transitioned into "virtual service visits." Utilizing video calling, water conservation staff continue to provide this service to City water customers upon request.

### *9.2.7.3 Free Indoor Water-Efficient Device Program*

Homes built prior to 1992 may not have water-efficient indoor plumbing, such as low flow showerheads, low flush toilets, or faucet aerators. The U.S. Energy Policy Act of 1992 required 1.6 gallon-per-flush toilets, 2.5 gallon-per-minute (gpm) showerheads, and 2.5 gpm faucets to be used after January 1994. In 2002, to promote indoor water conservation, the City piloted a free water-efficient showerhead program to residential customers; however, the showerheads were not well received, likely due to poor aesthetic appeal, and the program has been discontinued for a number of years.

In 2008, the City began running the current Free Indoor Water-Efficient Device Program, with more aesthetically appealing equipment, to help residents meet their water conservation goals. This program continues to offer all City water customers low flow showerheads (limit 3 per water account), kitchen aerators (limit 1 per water account), and bathroom aerators (limit 3 per water account). Additionally, the City provides free toilet dye strips for toilet leak detection. These items are provided by request and offered by water staff to customers. A display at the City's Customer Service Center counter displays the offer of this program. The program was also advertised during local events where a City water conservation table is present.

#### *9.2.7.4 Free Water Conservation Lavatory Signs*

The City provides commercial customers with easy-to-use water conservation clings that can be posted on lavatory mirrors. These signs remind customers and employees to be mindful of water waste.

#### *9.2.7.5 Rebate Programs*

The following rebate programs reimburse the City's customers for upgrading existing equipment and appliances with more water-efficient models.

##### 9.2.7.5.1 Weather-Based Irrigation Controllers

The City also partners with Zone 7 to provide a Weather-Based Irrigation Controller Rebate Program, which is available to single- and multi-family residences and non-residential customers. Installing weather-based irrigation controllers qualifies customers for a rebate of up to 50 percent of associated costs, up to a maximum of $75 for single-family residences, $100 for multi-family residences, or $3,000 for non-residential properties.

##### 9.2.7.5.2 Water-Efficient Irrigation Equipment

Irrigation customers participating in the City's Water-Efficient Landscape Program are eligible for rebates towards qualifying water-efficient irrigation equipment utilized on the converted landscape area. Qualifying equipment includes rain sensors, pressure regulating devices, and rotary nozzles. The maximum rebate is $200 per site.

##### 9.2.7.5.3 Water-Efficient Washing Machines

Since 1998, Zone 7 has had a Residential Clothes Washer Rebate Program available to Livermore-Amador Valley water customers. The rebate is for the purchase of qualifying high efficiency clothes washing machines. In 2008, Zone 7 partnered with Pacific Gas and Electric (PG&E) and other San Francisco Bay Area water agencies on a regional strategy to increase water and energy efficiency. The current program offers a rebate of up to $75 for installation of an "Energy Star Most Efficient" clothes washer. Though PG&E terminated their joint participation in the rebate program in 2018, Zone 7, the City, and the other Zone 7 retailers agreed to support the continuation of this rebate to the City's water customers.

High-efficiency washing machines use about 50 percent less water than conventional, top-loading models; using only 20 to 30 gallons of water per load compared to 40 to 45 gallons. The estimated savings for a typical household is about 5,100 gallons per year. This program has been very successful in the City's service area, and the City plans to continue to support this program through Zone 7 as an effective regional program to further reduce future water demand in the City's service area.

## 9.3 WATER USE OBJECTIVES (FUTURE REQUIREMENTS)

In 2018, the State Legislature enacted two policy bills, (SB 606 (Hertzberg) and AB 1668 (Friedman)), to establish long-term water conservation and drought planning to adapt to climate change and the associated longer and more intense droughts in California. These two policy bills build on SB X7-7 and set authorities and requirements for urban water use efficiency. The legislation sets standards for indoor residential use and requires the SWRCB, in coordination with DWR, to adopt efficiency standards for outdoor residential use, water losses, and commercial, institutional, and industrial (CII) outdoor landscape areas with dedicated irrigation meters. At the time of preparation of this UWMP, DWR and the SWRCB are in the process of developing new standards for water loss and indoor and outdoor residential water use. These standards will require urban water retailers to develop agency-wide water use objectives, provide annual reports, and update their UWMP.

The State Legislature established indoor residential water use standards as 55 GPCD until January 2025, 52.5 GPCD from 2025 to 2029, and 50 GPCD in January 2030, or a greater standard recommended by DWR and the SWRCB. By June 30, 2022, the SWRCB is anticipated to adopt an outdoor residential use standard, a standard for CII outdoor landscape areas with dedicated irrigation meters, and performance measures for CII water uses. At that time, the SWRCB will adopt guidelines and methodologies for calculating the water use objectives. In accordance with CWC §10609.20(c), the water use objective for urban water retailers will be based on the estimated efficient indoor and outdoor residential water use, efficient outdoor irrigation of CII landscaped areas, estimated water losses, and estimated water use for variances approved by the SWRCB aggregated across the population in its water service area.

By November 1, 2023, and November 1 of every year thereafter, the City will calculate its urban water use objective and actual water use and provide an annual report to the State. By January 1, 2024, the City will prepare a UWMP supplemental incorporating DMMs and other water efficiency standards that it plans to implement to achieve its water use objective by January 1, 2027.

# CHAPTER 10
# Plan Adoption, Submittal, and Implementation

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

## 10.1 INCLUSION OF ALL 2020 DATA

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

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

## 10.2 NOTICE OF PUBLIC HEARING

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

### 10.2.1 Notices to Cities and Counties

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

- Zone 7 Water Agency
- Dublin San Ramon Services District
- California Water Service - Livermore District
- City of Livermore
- DERWA

The City coordinated the preparation of its UWMP and WSCP update internally, with Alameda County, and with the above listed agencies. The notice of preparation is included as Appendix E. Upon substantial completion of this 2020 UWMP, the City provided the agencies listed above, including internally within the City and Alameda County, notice of public hearing (Appendix E).

Notifications to cities and counties, in accordance with the Act, are summarized in Table 10-1.

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

| City Name | 60 Day Notice | Notice of Public Hearing |
|---|---|---|
| City of Pleasanton | Yes | Yes |
| **County Name** | **60 Day Notice** | **Notice of Public Hearing** |
| Alameda County | Yes | Yes |
| NOTES: This table lists only the cities and counties that the City is required to notify. See text for list of other cities, agencies, and stakeholders notified. | | |

## 10.2.2 Notice to the Public

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

A Notice of Public Hearing was issued in accordance with Government Code Section 6066 and was published twice in the local newspaper (Valley Times) to notify all customers and local governments of the public hearing. In addition, the notice was posted on the City's website, www.cityofpleasantonca.gov. A copy of the published Notice of Public Hearing is included in Appendix E.

# 10.3 PUBLIC HEARING AND ADOPTION

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

The public hearing provided an opportunity for City water users and the general public to become familiar with the 2020 UWMP and ask questions about the City's water supply, its continuing plans for providing a reliable, safe, high-quality water supply, and its plans to mitigate various potential water shortage conditions. Copies of the draft UWMP, including the WSCP, were made available for public inspection at the City's Operations Service Center, the Pleasanton Public Library, and on the City website.

## 10.3.1 Public Hearing

A public hearing was held on June 1, 2021, during which the City received and considered input from the public before adopting the 2020 UWMP and updated WSCP. As part of the public hearing, the City also provided a report on the City's compliance with the Water Conservation Act of 2009. The report included information on the City's baseline, water use targets, compliance, and implementation, as discussed previously in Chapter 5 of this plan.

### 10.3.2 Adoption

Subsequent to the public hearing, this 2020 UWMP was adopted by the City Council on June 1, 2021. The City adopted the updated WSCP separately so that it may be updated as necessary. Copies of the adopted resolutions are included in Appendix L.

## 10.4 PLAN SUBMITTAL

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

No later than 30 days after adoption, a copy of the adopted 2020 UWMP, including the WSCP, will be provided to the City (City of Pleasanton) and County (Alameda County) to which the City provides water.

## 10.5 PUBLIC AVAILABILITY

No later than 30 days after submittal to DWR, copies of this Plan, including the WSCP, will be available at the City's Operations Service Center (3333 Busch Road, Pleasanton) and Pleasanton Public Library (400 Old Bernal Avenue, Pleasanton) for public review during normal business hours. An electronic copy of this 2020 UWMP will also be available for review and download on the City's website: www.cityofpleasantonca.gov.

## 10.6 AMENDING AN ADOPTED UWMP OR WATER SHORTAGE CONTINGENCY PLAN

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

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