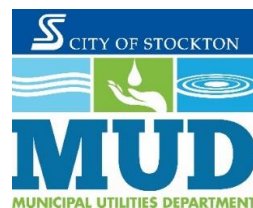


City of Stockton 2020 Urban Water Management Plan



JOINTLY PREPARED BY



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DEPARTMENT OF WATER RESOURCES

P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791



March 29, 2022

Mitchell Maidrand
Deputy Director - Water Resources Division
11373 North Lower Sacramento Road
Lodi, California 95242

RE: Urban Water Management Plan Requirements Addressed

Dear Mitchell Maidrand

The Department of Water Resources (DWR) has reviewed the 2020 Urban Water Management Plan (UWMP) for the City of Stockton received on June 21, 2021. The California Water Code (CWC) directs DWR to report to the legislature once every five years on the status of submitted UWMPs. In meeting this legislative reporting requirement, DWR reviews all submitted UWMPs.

DWR's review of the City of Stockton's 2020 UWMP has found that the UWMP has addresses the requirements of the CWC. DWR's review of plans is limited to assessing whether suppliers have addressed the required legislative elements. In its review, DWR does not evaluate or analyze the supplier's UWMP data, projections, or water management strategies. This letter acknowledges that the City of Stockton's 2020 UWMP addresses the CWC requirements. The results of the review will be provided to DWR's Financial Assistance Branch.

If you have amended the 2020 UWMP and/or the 2020 Water Shortage Contingency Plan since the submittal of the original documents(s), you must submit the amended document(s) to the DWR WUE data portal and will need to contact us to do so.

If you have any questions regarding the review of the UWMP or urban water management planning, please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Julie Ekstrom'.

Julie Ekstrom, Ph.D.
Supervisor, Urban Unit
Water Use Efficiency Branch
(916) 612-4371

Electronic cc:

Danny Trejo
Elizabeth Drayer

Errata Sheet for Minor Corrections to City of Stockton 2020 Urban Water Management Plan (UWMP)

This errata sheet logs minor content errors that were identified after final adoption of the City of Stockton 2020 UWMP. DWR has determined that these corrections are minor and do not require the UWMP to be amended.

- ☒ These data errors have been corrected in the Department of Water Resources (DWR) UWMP database at <https://wuedata.water.ca.gov/secure/>
- ☒ This errata sheet has been filed with the UWMP in all locations where it is made publicly available, including the California State Library. Errata may be submitted to State Library via email to cslgps@library.ca.gov

Name and agency of the person filing errata sheet: Elizabeth Drayer, West Yost Associates

| # | Description of Correction | Location | Rationale | Date Error Corrected |
|---|--|--|---|----------------------|
| 1 | Table 5-3: Filled in the Adjusted 2020 GPCD to be the same as the Actual 2020 GPCD of 158 gallons per capita per day (gpcd) | WUEdata Table 5-3 | At DWR's request, filled in the Adjusted 2020 GPCD to be the same as the Actual 2020 GPCD in Table 5-3 in WUEdata, as the Adjusted 2020 GPCD was left blank in the original submittal. | March 21, 2022 |
| 2 | Chapter 6 Water Supply Characterization: Added statements indicating that the Eastern San Joaquin groundwater subbasin (DWR Basin No. 5-22.01) is not adjudicated and that it is classified by DWR as a high-priority subbasin | Chapter 6 Water Supply Characterization, Section 6.2.2.1 Groundwater Basin Management (bottom of page 6-5 and top of page 6-6) | At DWR's request, added statements clarifying that the groundwater subbasin is not adjudicated and that it is classified by DWR as a high-priority subbasin, as these statements were not included in the original submittal. | March 21, 2022 |
| 3 | Table 8-3: Supply Augmentation and Other Actions: Added Stages 1, 2 and 3 and indicated that Stages 1, 2 and 3 do not have any specific supply augmentation or other actions | WUEdata Table 8-3 | At DWR's request, added Stages 1, 2 and 3 to Table 8-3 in WUEdata. These stages were not included in the original submittal as no supply augmentation or other actions are associated with Stages 1, 2 and 3. | March 21, 2022 |

2020 Urban Water Management Plan

Prepared for

City of Stockton

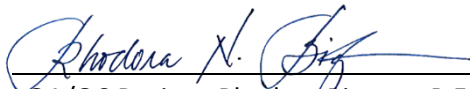
Project No. 129-60-20-40



Project Manager: Elizabeth Drayer, P.E.

06-08-21

Date



QA/QC Review: Rhodora Biagtan, P.E.

06-08-21

Date

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| Appendix I. | Water Shortage Contingency Plan |
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| Appendix K. | Public Information Materials |
| Appendix L. | Stockton Municipal Code (SMC) Section 16.56.040 |
| Appendix M. | Adoption Resolution |

LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|-----------|-------------------------------------|
| °F | Degrees Fahrenheit |
| AB | Assembly Bill |
| Act | Urban Water Management Planning Act |
| ADWF | Average Dry Weather Flow |
| AF | Acre-Feet |
| AFY | Acre-Feet Per Year |
| AMI | Advanced Metering Infrastructure |
| AWIA | America’s Water Infrastructure Act |
| AWWA | American Water Works Association |
| CACWD | Calaveras County Water District |
| Cal Water | California Water Service |

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| CAP | Climate Action Plan |
| CCF | Hundred Cubic Feet |
| CIMIS | California Irrigation Management Information System |
| City | City of Stockton |
| CMMS | Computerized Maintenance Management System |
| COSMA | City of Stockton Metropolitan Area |
| COSMUD | City of Stockton Municipal Utilities Department |
| CPUC | California Public Utilities Commission |
| CSJWCD | Central San Joaquin Water Conservation District |
| CVP | Central Valley Project |
| CWC | California Water Code |
| DDW | Division of Drinking Water |
| Delta | Sacramento-San Joaquin Delta |
| DJWWTP | Dr. Joe Waidhofer Water Treatment Plant |
| DMM | Demand Management Measures |
| DRA | Drought Risk Assessment |
| DU | Dwelling Unit |
| DWR | Department of Water Resources |
| DWTP | Delta Water Treatment Plant |
| EPA | Environmental Protection Agency |
| ET | Evapotranspiration |
| FEMA | Federal Emergency Management Agency |
| FMS | Fourteen-Mile Slough |
| GHG | Greenhouse Gas |
| GPCD | Gallons per capita per day |
| GPM | Gallons Per Minute |
| GPU | General Plan Update |
| GSP | Eastern San Joaquin Groundwater Subbasin Groundwater Sustainability Plan |
| GWA | Eastern San Joaquin Groundwater Authority |
| IPS | Intake Pump Station |
| kWh | Kilowatt Hour |
| Legislature | California State Legislature |
| LHMP | Local Hazard Mitigation Plan |
| MG | Million Gallon |
| MGD | Million Gallons per Day |
| MOMR | Monthly Operations and Maintenance Report |
| MRP | Municipal Regional Stormwater NPDES Permit |
| MWEL | Model Water Efficient Landscape Ordinance |
| NAICS | North American Industry Classification System |
| NMFS | National Marine Fisheries Service |
| NOAA | National Oceanic and Atmospheric Administration |
| NW | Northwest |

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| REXPO | Recycling Exposition |
| RRA | Risk and Resilience Assessment |
| RWCF | Regional Wastewater Control Facility |
| SAWS | Stockton Area Water Suppliers |
| SB | Senate Bill |
| SEWD | Stockton East Water District |
| SGMA | Sustainable Groundwater Management Act |
| SJCLAFCo | San Joaquin County Local Agency Formation Commission |
| SJCOG | San Joaquin Council of Governments |
| SMC | Stockton Municipal Code |
| SOI/MSR | City of Stockton Sphere of Influence Plan/Municipal Service Review |
| State Water Board | State Water Resources Control Board |
| Target | 2020 Urban Water Use Target |
| USBR | United States Bureau of Reclamation |
| USEPA | United States Environmental Protection Agency |
| UWMP | Urban Water Management Plan |
| WID | Woodbridge Irrigation District |
| WR | Weston Ranch |
| WRCC | Western Regional Climate Center |
| WSCP | Water Shortage Contingency Plan |
| WUE | Water Use Efficiency |

Executive Summary

INTRODUCTION

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

Since the City of Stockton (City), through the City of Stockton Municipal Utilities Department (COSMUD), provides water service directly to more than 3,000 connections in the northern and southern portions of Stockton, it is required to prepare a UWMP.

This Executive Summary serves as a Lay Description of the City's 2020 UWMP, as required by California Water Code §10630.5.

CALIFORNIA WATER CODE REQUIREMENTS

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

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

The 2012 to 2016 drought has led to further revisions to the Act under the 2018 Water Conservation Legislation to improve water supply planning for long-term reliability and resilience to drought and climate change. Changes presented by the legislation include:

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

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

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

COSMUD WATER SERVICE AREA AND FACILITIES

The COSMUD water facilities produce, treat, store, and deliver drinking water to its customers. COSMUD serves the North Stockton area, the South Stockton area, and the Walnut Plant area in Central Stockton. California Water Service (Cal Water) serves the remaining portion of Central Stockton. COSMUD delivers water to portions of San Joaquin County (Colonial Heights and Lincoln Village) by agreement. Cal Water delivers water to the Walnut Plant area by agreement with the City. This 2020 UWMP only describes the water supplies and uses in the portions of the City served by the COSMUD; Cal Water is required to prepare a separate 2020 UWMP for the portions of the City served by Cal Water.

COSMUD diverts water from the San Joaquin River through an intake facility at the Empire Tract and purchases untreated water from the Woodbridge Irrigation District. These supplies are treated at the COSMUD Delta Water Treatment Plant. COSMUD also purchases treated water from the Stockton East Water District and produces water from its groundwater wells in North Stockton and South Stockton. COSMUD operates an extensive network of water pipelines, tanks, and pumping facilities to deliver that drinking water to its customers.

COSMUD WATER USE

COSMUD currently serves a population of approximately 184,400. It anticipates population growth and future planned development in its water service area, which would increase their demand for water. Thorough and accurate accounting of current and future water demands is critical for COSMUD planning efforts. To continue delivering safe and reliable drinking water, COSMUD must know how much water its customers currently use and how much they expect to use in the future.

Projected future water demands have been estimated based on the anticipated growth as defined by the Envision Stockton 2040 General Plan, adopted by the Stockton City Council in December 2018. Future study areas and planned development in the COSMUD water service area were reviewed and confirmed with the City’s Community Development Department. Based on the anticipated growth, water demands in the COSMUD water service area are expected to increase approximately 39 percent (from 2020 levels) by 2045.

Executive Summary

COSMUD WATER SUPPLIES

The COSMUD has the following existing water supplies:

- Surface water diverted from the San Joaquin River, supplemented by surface water from the Mokelumne River diverted and conveyed by Woodbridge Irrigation District, which is treated at the COSMUD Delta Water Treatment Plant
- Treated surface water purchased from the Stockton East Water District
- Groundwater pumped by COSMUD from City-owned and operated wells from the underlying Eastern San Joaquin Groundwater Subbasin

To reliably meet current and future water demands, the COSMUD plans to implement several projects to optimize the use of its available water supplies. These projects include the installation of a facility to allow water from the Delta Water Treatment Plant and the Stockton East Water District to be combined, the increase of water supplies from the Woodbridge Irrigation District through the annexation of properties in the Woodbridge Irrigation District service area, and the installation of water meters that use advanced technology to improve efficiency and allow water customers to track and manage their water use. The COSMUD also plans to study its groundwater supply and the potential for banking unused available surface water in the local groundwater basin.

CONSERVATION TARGET COMPLIANCE

In accordance with SB X7-7, the COSMUD must meet a per capita water use target of 165 gallons per person per day by 2020 for its water service area. Looking at the COSMUD water service area population and water use in 2020, the COSMUD met and exceeded its water conservation target with a per capita water use of 158 gallons per person per day.

WATER SERVICE RELIABILITY

The California Water Code asks water suppliers to evaluate their water service reliability by examining the impact of drought on their water supplies and comparing those reduced supplies to water demands. Specifically, agencies 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 San Joaquin River water supply during a single dry year by looking at its San Joaquin River water supply reduction during the driest year on record. If that reduction was 50 percent, then the City can conservatively assume a similar 50 percent reduction in San Joaquin River 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 at any period between 2025 and 2045. The City's drought risk was specifically assessed between 2021 and 2025, assuming that the next five years are dry years. In each case, water supplies comfortably exceed water demands. This remains true whether the drought occurs in 2021, 2045, or any year between.

Executive Summary

WATER SHORTAGE CONTINGENCY PLAN

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

UWMP PREPARATION, REVIEW, AND ADOPTION

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

The public hearing provided an opportunity for COSMUD 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 Stockton City Council adopted the 2020 UWMP on June 8, 2021. A copy of the adopted Plan was provided to the Department of Water Resources and is available on the City's website: www.stocktonca.gov.

CHAPTER 1

Introduction

This chapter provides an introduction and overview of the City of Stockton (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 which provides a framework for long-term water supply planning and documents how urban water suppliers are carrying out their long-term resource planning responsibilities to ensure adequate water supplies are available to meet existing and future water demands. A copy of the current version of the Act, as incorporated in Sections 10610 through 10657 of the California Water Code, is provided in Appendix A of this document.

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

The purpose of the UWMP is to provide a planning tool for the City to develop and deliver municipal water supplies to its water service area. This UWMP provides the City a water management action plan for guidance as water conditions change and management conditions arise. The City of Stockton Municipal Utilities Department (COSMUD) provides water service to the northern and southern portions of Stockton as described and shown in Chapter 3. The central area of Stockton is served by the California Water Service Company (Cal Water), an investor-owned public utility company regulated by the California Public Utilities Commission (CPUC). The central area of Stockton is excluded from this UWMP. To reduce the demand for potable water, the City has committed itself to participate in water conservation activities. To continue to meet the water needs of the community, the City carefully manages its available water resources.

The City's 2020 UWMP is a comprehensive guide for planning for a safe and adequate water supply. This UWMP provides a reliable water management action plan that can be used as a reference as conditions change and management decisions arise.

1.3 CHANGES FROM 2015 UWMP

The Urban Water Management Planning Act has been modified over the years in response to the State's water shortages, droughts, and other factors. A significant amendment was made in 2009, after the 2007 to 2009 drought, and as a result of the Governor's call for a statewide 20 percent reduction in urban water use by the year 2020. This was the Water Conservation Act of 2009, also known as 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 years led to further amendments to the California Water Code to improve on water supply planning for long-term reliability and resilience to drought and climate change.

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

- **Five Consecutive Dry-Year Water Reliability Assessment.** 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. [CWC §10635(a)]
- **Drought Risk Assessment.** The California Legislature created a new UWMP requirement for drought planning in part because of the significant duration of recent California droughts and the predictions about hydrological variability attributable to climate change. The Drought Risk Assessment (DRA) requires the urban water supplier to assess water supply reliability over a five-year period from 2021 to 2025 that examines water supplies, water uses, and the resulting water supply reliability under a reasonable prediction for five consecutive dry years. The DRA is discussed in Chapter 7 based on the water use information in Chapter 4, water supply analysis in Chapter 6, and the water reliability determinations in Chapter 7. [CWC §10635(b)]
- **Seismic Risk.** The Water Code now requires urban water suppliers to specifically address seismic risk to various water system facilities and to have a mitigation plan. Water supply infrastructure planning is correlated with the regional hazard mitigation plan associated with the urban water supplier. The City's seismic risk is discussed in Chapter 8. [CWC §10632.5]
- **Energy Use Information.** The Water Code now requires Suppliers to include readily obtainable information on estimated amounts of energy for their water supply extraction, treatment, distribution, storage, conveyance, and other water uses. COSMUD energy use for potable water and wastewater services are provided in Chapter 6. [CWC §10631.2]
- **Water Loss Reporting for Five Years.** The Water Code added the requirement to that water retailers include the past five years of water loss audit reports as part of this UWMP. COSMUD water losses are reported in Chapter 4. [CWC §10608.34]
- **Water Shortage Contingency Plan.** In 2018, the Legislature modified the UWMP laws to require a Water Shortage Contingency Plan (WSCP) with specific elements. The WSCP is a document that provides the urban water supplier with an action plan for a drought or catastrophic water supply shortage. Although the new requirements are more prescriptive than previous versions, many of these elements have long been included in WSCPs, other sections of UWMPs, or as part of the urban water supplier's standard procedures and response actions. Many of these actions were implemented by the urban water suppliers during the last drought, to successfully meet changing local water supply challenges. The WSCP is used by DWR, the State Water Board, and the Legislature in addressing extreme drought conditions or statewide calamities that impact water supply availability. The City's WSCP is summarized in Chapter 8 and included as an appendix to this 2020 UWMP. [CWC §10632]

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

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

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

The City does not have a defined, proposed project or proposed covered action that would involve the transfer, export or use of water in the Delta at this time. Thus, a detailed explication of the City's consistency with Delta Plan Policy WR P1 is not provided in this 2020 UWMP. In the future, if the City moves forward with a defined, proposed covered action, the City will comply with all State required application requirements.

Although the City is not required to demonstrate consistency with Delta Plan Policy WR P1 in this Plan, the Plan demonstrates that the City's actions with respect to its existing Delta water use are contributing to reduced reliance on the Delta and improved regional self-reliance. The City's primary surface water supply is derived from the San Joaquin River under an appropriative right authorized by Water Code Section 1485. Under this right, the City's diversions are limited to the amount of treated effluent discharged from the Stockton Regional Wastewater Control Facility, which is a short distance upstream of the City's surface water diversion. In this way, the City's San Joaquin River water diversion has no net impact on San Joaquin River flows and is, by its very nature, regionally self-reliant. To the extent feasible given funding limitations, the City also is pursuing various programs and projects that will improve its regional self-reliance, as described in this Plan, including conjunctive use projects, local and regional water

supply and storage projects, and coordinates with other regional water suppliers regarding local and regional water supply efforts.

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 Plan Guidebook” (DWR Guidebook).

This 2020 UWMP is organized into the following chapters:

- Chapter 1: Introduction
- Chapter 2: Plan Preparation
- Chapter 3: System Description
- Chapter 4: Customer Water Use
- 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: Urban Water Management Planning Act
- Appendix B: DWR 2020 UWMP Tables
- Appendix C: DWR 2020 UWMP Checklist
- Appendix D: Agency and Public Notices
- Appendix E: Distribution System Water Loss Audits
- Appendix F: SB X7-7 Compliance Form and DWR Population Tool
- Appendix G: Water Supply Agreements
- Appendix H: City of Stockton Water Right Permit 21176
- Appendix I: Water Shortage Contingency Plan
- Appendix J: Stockton Municipal Code (SMC) Chapter 13.28
- Appendix K: Public Information Materials
- Appendix L: Stockton Municipal Code (SMC) Section 16.56.040
- Appendix M: Adoption Resolutions

Chapter 1

Introduction



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

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

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CHAPTER 2

Plan Preparation

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

2.1 BASIS FOR PREPARING A PLAN

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

COSMUD is a retail water agency that supplies treated water within the City. As shown in Table 2-1, in 2020, COSMUD provided water supplies to 49,573 potable water customers (connections) and supplied 34,404 AF of potable water. Therefore, the City is required to prepare a UWMP. The City's last UWMP, the 2015 UWMP, was adopted by the Stockton City Council in July 2016.

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

| Public Water System Number | Public Water System Name | Number of Municipal Connections 2020 | Volume of Water Supplied 2020 * |
|--|--------------------------|--------------------------------------|---------------------------------|
| <i>Add additional rows as needed</i> | | | |
| CA3910012 | City of Stockton | 49,573 | 34,404 |
| TOTAL | | 49,573 | 34,404 |
| * Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | |
| NOTES: Volume of water supplied is in acre-feet (AF). | | | |

2.2 REGIONAL PLANNING

As described in Section 2.3 below, the City has prepared this 2020 UWMP on an individual reporting basis, not part of a regional planning process. However, the City routinely coordinates with Stockton East Water District (SEWD) (water wholesale provider), Woodbridge Irrigation District (WID) (raw water supplier) and other regional water retailers including California Water Service - Stockton District (Cal Water) and San Joaquin County. Together, these agencies coordinate on water supply matters in conjunction with the assessment of the region's available water supply and projected water demands for the SEWD 2020 UWMP. SEWD also provided assistance to the City in the preparation of this plan. The projected future availability and reliability of water supplies from SEWD are discussed in Chapters 6 and 7 of this UWMP.

2.3 INDIVIDUAL OR REGIONAL PLANNING AND COMPLIANCE

This plan has been prepared on an Individual Reporting basis, covering only the COSMUD water service area (see Figure 3-2). As described below in Section 2.5, the City has notified and coordinated with appropriate regional agencies and constituents, including SEWD, WID, Cal Water, San Joaquin County, and the Eastern San Joaquin Groundwater Authority.

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

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

2.4 FISCAL OR CALENDAR YEAR AND UNITS OF MEASURE

The City, through COSMUD, is a water retailer.

The City's 2020 UWMP has been prepared on a calendar year basis. Water use and planning data for the entire calendar year of 2020 has been included. The City's reporting of water volume in this plan is reported in AF. Table 2-3 summarizes City reporting methods and units for this plan.

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

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

2.5 COORDINATION AND OUTREACH

This section includes a discussion of the City's inter-agency coordination and coordination with the general public. The UWMP Act requires the City to coordinate the preparation of its UWMP with other appropriate agencies and all departments within the City, including other water suppliers that share a common source, water management agencies, and relevant public agencies. The City coordinated the preparation of its UWMP with Cal Water, San Joaquin County, SEWD, WID, and Eastern San Joaquin Groundwater Authority (GWA). These and other neighboring water agencies, as well as the public, participated in the coordination and preparation of this plan, as summarized below.

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

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

2.5.1 Wholesale and Retail Coordination

The City is one of three water retailers that purchase water on a wholesale basis from SEWD. As noted in Table 2-4, the City notified SEWD of the development of its 2020 UWMP and provided SEWD with a copy of the draft. The draft includes projected water demand from each of the City's water sources, in five-year increments, to 2045. In addition, the City has participated in SEWD's development of its respective UWMP by providing the COSMUD water demand projections and providing comments on SEWD's Draft UWMP. The City, in turn, received information from SEWD on its existing and planned sources of water.

2.5.2 Coordination with Other Agencies and the Community

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

2.5.2.1 Coordination with Other Agencies

The City actively coordinates with other agencies through its association with the Stockton Area Water Suppliers (SAWS). SAWS was formed in 1980 as an association of Stockton urban area retail water suppliers dedicated to communication and mutual assistance regarding issues affecting water supply, distribution, and conservation in the City of Stockton Metropolitan Area (COSMA). Members of SAWS include the City, Cal Water, SEWD, and San Joaquin County. The City is also a member of the GWA and the Central Valley Salinity Alternatives for Long-Term Sustainability (Lower San Joaquin River Committee).

These agencies, as well as the public, participated in the coordination and preparation of this plan, as discussed further in Chapter 10. Copies of notices to agencies are included in Appendix D.

2.5.2.2 Coordination with the Community

The City has actively encouraged 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 ongoing projects and posts announcements of planned rate increases to fund water production, operations, and maintenance costs.

As part of development of this plan, which includes a Water Shortage Contingency Plan (WSCP), the City allowed a public review period, following noticing and prior to adoption, to allow ample time for public comments to be developed and received. Public noticing, pursuant to Section 6066 of the Government Code, was conducted prior to commencement of the public comment period. During the public comment period, the Draft UWMP was made available on the City's website. Public hearing notices are included in Appendix D.

2.5.3 Notice to Cities and Counties

Water Code §10621(b) requires agencies to notify the cities and counties to which they serve water at least 60 days in advance of the public hearing that the plan is being updated and reviewed. In June 2020, a notice of preparation was sent to the cities and counties served with water by the City, and other stakeholders, to inform them of the UWMP update process and schedule, and to solicit input for the plan update. The notifications to cities and counties, the public hearing notifications, and the public hearing and adoption are discussed in Chapter 10.

CHAPTER 3

System Description

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

3.1 GENERAL DESCRIPTION

The City of Stockton (City) is located in the Central Valley of California and is the County seat for San Joaquin County. The City was founded in the late 1840's and grew as a supply center during the California gold rush. The City was incorporated in 1850 and now occupies approximately 65 square miles and has a population of more than 316,000. The deep-water port and channel to San Francisco Bay help support a large industrial and agricultural base.

The City created the COSMUD in the late 1970's for purposes of constructing, operating, and maintaining water, wastewater, and drainage facilities within the City's service areas. An organizational chart for the COSMUD is provided on Figure 3-1. The City is organized as a charter government.

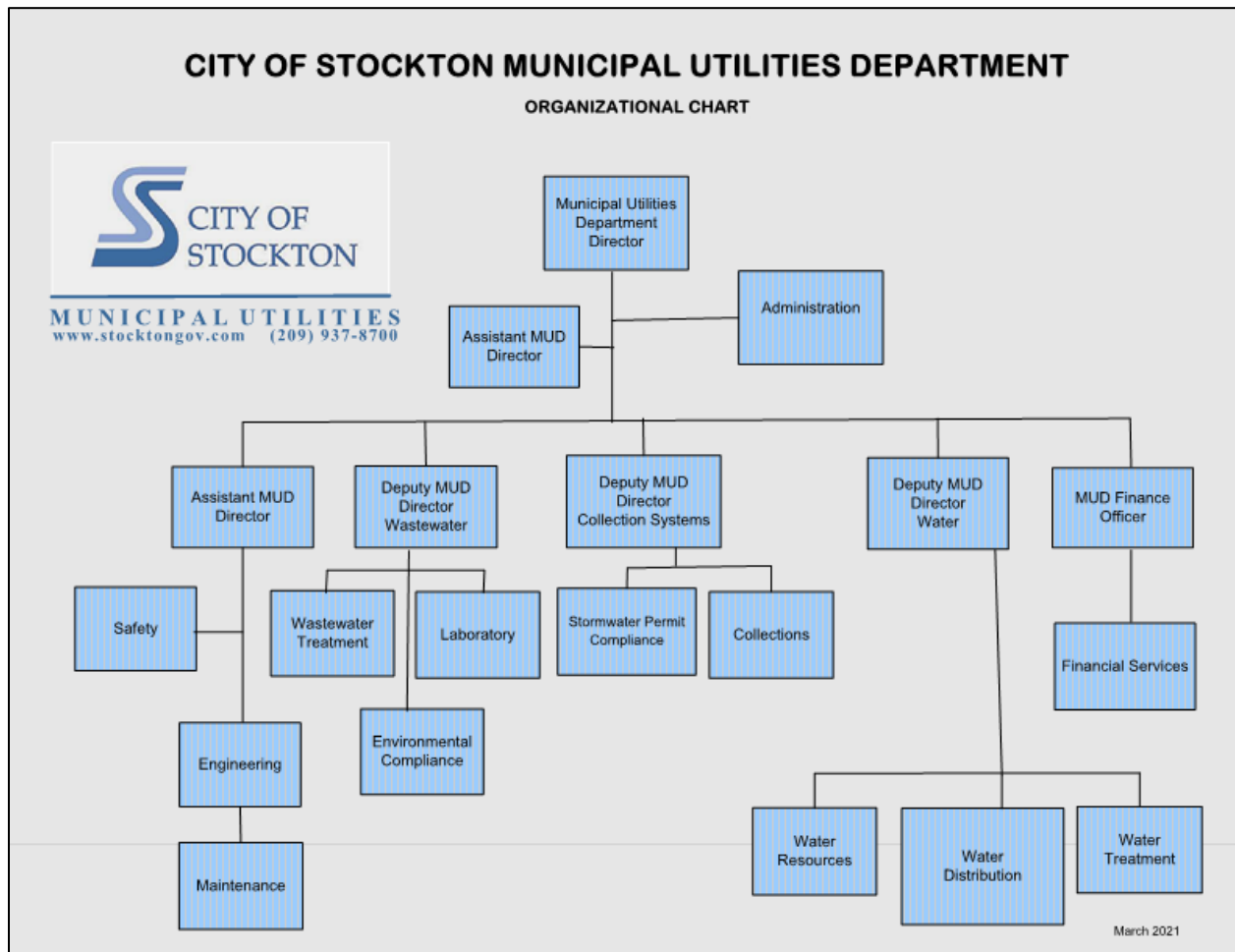


Figure 3-1. COSMUD Organizational Chart

The COSMUD pumps and treats water from the San Joaquin River, receives raw water from WID when San Joaquin River water pumping is curtailed, purchases treated water from the SEWD, and pumps from local groundwater wells for its water supply, as described in further detail in Chapter 6.

Commercial and residential growth in the region since the 1970's has required the need for increased water supplies to deliver to the expanding COSMUD water service area. Additional controlled growth is anticipated in the region. Historically, SEWD provided treated water to COSMUD and has expanded its facilities to provide water supply to water retailers in the Stockton Metropolitan area. In 2012, the COSMUD commenced operation of the Delta Water Treatment Plant (DWTP). Current and future water supplies are described in greater detail in Chapter 6 of this UWMP.

3.2 SERVICE AREA BOUNDARY

The City is located in north central California, approximately 70 miles east of San Francisco Bay Area and 50 miles south of Sacramento. California State Highway 99 and Interstate 5 run north and south through the City on the east and west boundaries, respectively, and California State Highway 4 (the Crosstown Freeway) connects the two. The San Joaquin River flows from the south and terminates in the Delta.

As shown on Figure 3-2, the City can generally be divided into three distinct water service areas:

- **North Stockton:** Served by the COSMUD, with the exception of several small developed areas ("islands") served by San Joaquin County. Two of these County islands (Colonial Heights and Lincoln Village) receive water from SEWD that is delivered by the COSMUD
- **Central Stockton:** Served by Cal Water
- **South Stockton:** Served by the COSMUD

The City has provided water service to North Stockton since 1954 and to South Stockton since 1984. In general, the North Stockton water service area is primarily residential and is bounded by Eight Mile Road to the north, Cascade and Columbia Railroad to the east, the Calaveras River to the south and the City limits to the west. Residential developments adjacent to Eight Mile Road have continued to develop since the completion of the 2015 UWMP. The South Stockton water service area is largely comprised of residential (on the west side) and industrial and agricultural land uses. The South Stockton water service area is generally bounded by French Camp Slough to the north, City limits to the east and south, and the San Joaquin River to the west. In Central Stockton, the City provides water service to the Walnut Plant System through a wheeling agreement with Cal Water. The Walnut Plant area is comprised of residential customers and the Diamond Walnut processing facility.

Through COSMUD, the City owns and operates the DWTP, under the City's in-direct potable reuse program, which is located in the northern region of the City, and associated facilities including an intake pumping station on the southern tip of Empire Tract on the San Joaquin River and other conveyance infrastructure. The DWTP commenced operation in 2012 and has the capacity to treat up to 30 million gallons per day (MGD) [33,600 acre-feet per year (AFY)]. The major facilities are shown on Figure 3-2.

COSMUD also provides wastewater collection and treatment services for the entire City and nearby San Joaquin County areas. The City owns and operates its Regional Wastewater Control Facility (RWCF) and discharges to the San Joaquin River in the southern part of the City approximately 8 miles upstream of the DWTP intake pumping station. The RWCF has the capacity to treat up to 55 MGD of wastewater. Currently, it collects 33 MGD of average dry weather flow. The RWCF is currently undergoing construction to

Chapter 3

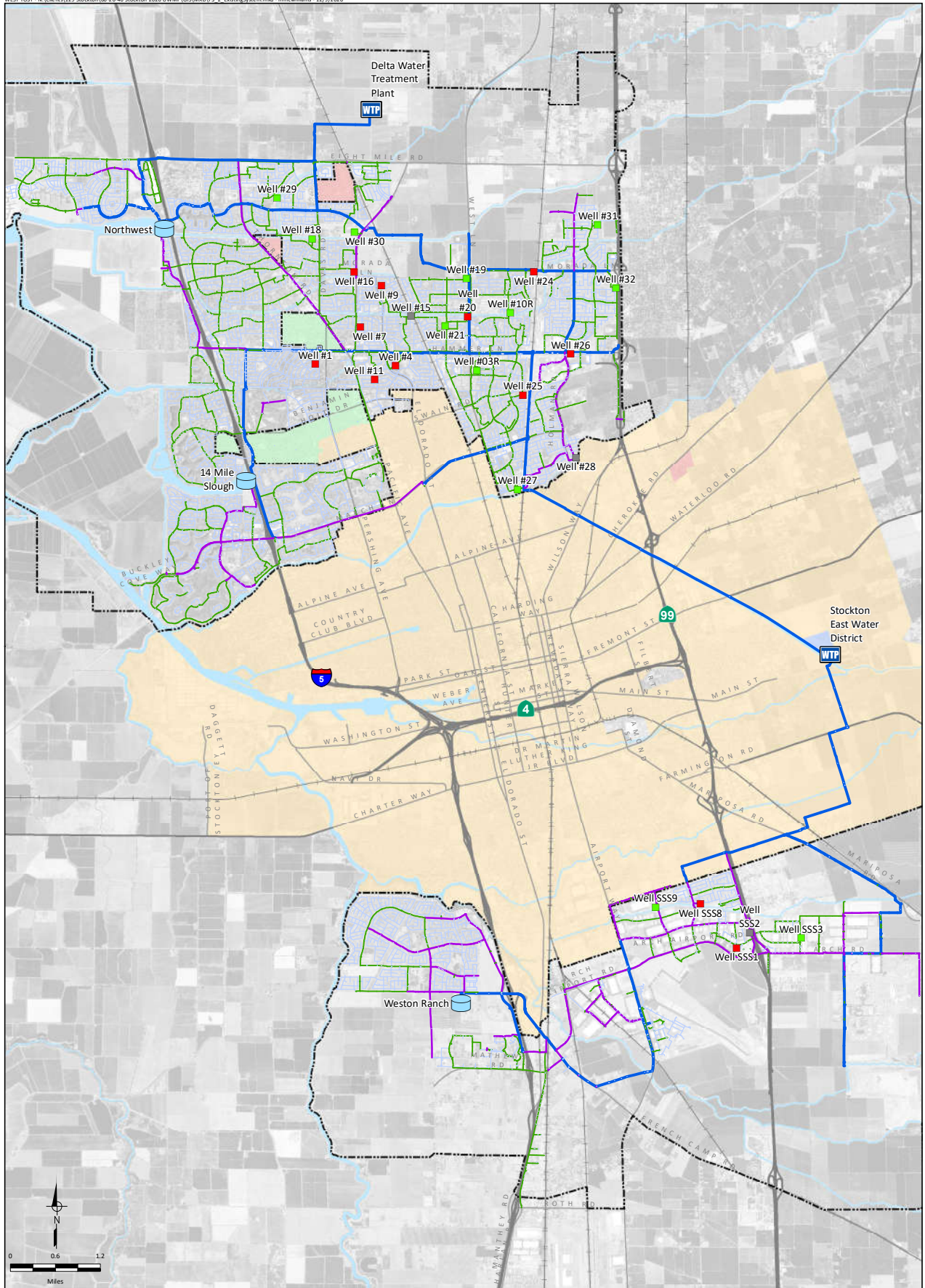
System Description



improve treatment system reliability for existing and projected flow, reduce energy usage, and reduce nitrogen concentrations in the final effluent. Coordinated operations are maintained between the DWTP and RWCF on a daily basis.

Areas within the City that are served by other water agencies are excluded from this UWMP. The Central Stockton water service area is owned and operated by Cal Water, which is an investor-owned public utility company regulated by the CPUC. Additionally, several small developed areas, located within the City's boundaries, are served by San Joaquin County and two small maintenance districts. Through the COSMUD water system, the City delivers water from SEWD to the San Joaquin County water systems under water service agreements. Under these water service agreements, COSMUD wheels water from SEWD to the San Joaquin County water systems.

The boundaries of the COSMUD water service areas and service areas of surrounding water agencies are shown on Figure 3-2.



Water Treatment Plant

Storage Tank & Reservoir Pump Station

Wells

Active
 Inactive
 Standby

Pipelines

Less than 12 inches
 12 - 14 inches
 16 - 22 inches
 24 inches or greater

COSMUD Water Service Boundary

California Water Service
 San Joaquin County (served by COSMUD)
 San Joaquin County
 Stockton East Water District

Figure 3-2

Existing Water System

City of Stockton
 2020 UWMP



3.3 SERVICE AREA CLIMATE

The climate of the COSMUD service area is best described as Mediterranean, characterized by hot, dry summers and cool winters. Precipitation in the area averages about 10 inches per year. The climate ranges from summer temperatures routinely exceeding 100 degrees Fahrenheit (°F) with low humidity, and winter temperatures dropping into the low 30's°F. Based on the historical data obtained from the California Irrigation Management Information System (CIMIS) and the Western Regional Climate Center (WRCC), the COSMUD water service areas average monthly temperatures are as low as 35°F and as high as 93°F.

Water use within the COSMUD service area is dependent on various climate factors such as temperature, precipitation, and evapotranspiration (ET). Climate data, including temperature and precipitation estimates, were obtained for Manteca, California, which is located approximately 15 miles to the south of the COSMUD service area. The period of record was 1971 to 2000.

ET describes the combined water lost through evaporation from the soil and surface-water bodies and plant transpiration. In general, the ET is given for turf grass, and then corrected for a specific crop type. Local ET data was obtained from CIMIS monitoring station in Manteca, California (Station #70), which is located just south of the COSMUD water service areas. The historical climate characteristics affecting water management in the COSMUD water service areas is shown in Table 3-1. Monthly Average Climate Data Summary.

| Table 3-1. Monthly Average Climate Data Summary | | | | |
|---|-------------------------------------|--------------------------------|---|---------|
| Month ^(a) | Standard Monthly Average ET, inches | Average Total Rainfall, inches | Average Temperature, degrees Fahrenheit | |
| | | | Maximum | Minimum |
| Manteca (CIMIS Station No. 70, WRCC Station No. 045303 ^(a)) | | | | |
| January | 1.11 | 1.65 | 53.7 | 36.3 |
| February | 1.96 | 1.35 | 61.1 | 39.3 |
| March | 3.54 | 1.52 | 66.3 | 42.1 |
| April | 5.09 | 0.95 | 72.4 | 45.2 |
| May | 6.77 | 0.21 | 80.9 | 50.5 |
| June | 7.73 | 0.09 | 88.6 | 55.9 |
| July | 8.01 | 0.12 | 93.2 | 59.2 |
| August | 7.04 | 0.23 | 91.5 | 58.5 |
| September | 5.16 | 0.24 | 87.7 | 55.9 |
| October | 3.41 | 0.97 | 77.7 | 49.2 |
| November | 1.70 | 1.58 | 61.1 | 40.4 |
| December | 1.05 | 1.51 | 53.8 | 35.4 |
| Totals | 52.57 | 10.41 | - | - |
| (a) Period of record is 1971 to 2000 | | | | |

3.4 WATER SUPPLY

The COSMUD has diverse water supply sources to assure service reliability. COSMUD provides potable water to its customers from a combination of surface water and groundwater supplies. The COSMUD water service areas are served by an existing water supply portfolio comprised of in-lieu conjunctive use of available surface and groundwater supplies which include:

- Surface water from the San Joaquin River that is diverted at the Intake Pump Station on Empire Tract located in Sacramento-San Joaquin Delta (Delta) eight miles downstream of the RWCF and treated at the City's DWTP; this supply is supplemented by raw surface water from the Mokelumne River diverted and conveyed by WID and treated at the City's DWTP when the City's San Joaquin River supplies are curtailed
- Treated surface water from SEWD conveyed from the New Melones (Stanislaus River) and New Hogan (Calaveras River) Reservoirs
- Groundwater pumped by the COSMUD from City-owned and operated wells in the underlying Eastern San Joaquin Groundwater Subbasin

These supplies are briefly described below. Additional discussion on the City's water supplies is provided in Chapter 6.

3.4.1 Surface Water Supply and Water Treatment Facilities

The City's surface water supply is from three primary sources: surface water diverted from the San Joaquin River treated at the City's DWTP, surface water from the Mokelumne River diverted and conveyed by the WID and treated at the City's DWTP, and treated surface water from SEWD.

The City exercises its water rights to the Delta, using an intake facility on the San Joaquin River. Under the in-direct potable reuse program, the City may take as much water from the San Joaquin River as the City's wastewater treatment plant discharges into the San Joaquin River. When water pumping is curtailed from the Delta due to environmental restrictions, the City purchases raw water from WID. Raw water is treated at the City's DWTP. The City also purchases treated water from SEWD and pumps groundwater to supplement its supplies.

Due to differing disinfection processes that present water quality issues related to low chlorine residual and the potential for formation of disinfection byproducts, COSMUD provides water from the DWTP only in its North Stockton water distribution system. Water from SEWD can be conveyed to both the North Stockton and South Stockton distribution systems. SEWD also supplies the City's Walnut Plant service area in Central Stockton. Cal Water conveys SEWD supply to the Walnut Plant service area via a wheeling agreement with COSMUD. Water supplies from local groundwater wells are used to supply both the COSMUD North Stockton and South Stockton water service areas.

At time of preparation of this 2020 UWMP, COSMUD is in the process of implementing the North Stockton Pipeline Hypochlorite Facility that will allow SEWD supplies to be conveyed to the North Stockton system and combined with the DWTP-produced water supply.

3.4.1.1 Sacramento-San Joaquin Delta

The City has permitted rights to water from the San Joaquin River based on Water Code Section 1485. The San Joaquin River provides the largest portion of the City's potable water supply. When the City received its water right permit in 2006, the City implemented the Delta Water Supply Project to construct its DWTP north of Stockton, the Intake Pump Station (IPS) at the southwest tip of Empire Tract, and associated water supply infrastructure. The DWTP was completed in 2012. Since that time, the COSMUD has diverted water from the San Joaquin River via the IPS and treats the water at the DWTP for an increasing portion of its water supply.

The DWTP has a current treatment capacity of 30 MGD. In 2020, it produced approximately 55 percent of the COSMUD water supply¹. The treatment process includes ozone oxidation and disinfection and membrane filtration with free chlorine added as a residual disinfectant. Treated water is stored in a 4-million gallon (MG) storage tank before being pumped to the North Stockton water service area.

The City's water supply from the San Joaquin River is curtailed annually from February 15th to June 15th due to U.S. Department of Fish and Wildlife Service, California Department of Fish and Wildlife, and National Marine Fisheries Service (NMFS)² environmental restrictions. During that period, the City obtains raw water from WID to supplement its water supply.

3.4.1.2 Woodbridge Irrigation District

WID provides supplemental raw water supply to the City. Under a 2008 agreement between the City and WID, COSMUD may receive up to 6,500 AFY from WID to augment water supply to the DWTP when San Joaquin River water is not available due to environmental restrictions. WID conveys water to the DWTP through a metered connection at the entrance of the DWTP. WID supply is transported through its Wilkinson Canal and Pixley Lateral Pipeline to the DWTP. Because it is treated at the DWTP, this water supply is currently distributed only in the North Stockton water service area.

3.4.1.3 Delta Water Treatment Plant

The DWTP, located just north of Stockton was completed in 2012. This facility currently has the capacity to treat up to 33,600 AFY of raw water from the Delta and WID. The facility is planned to be expanded as needed by the City, and as permitted by the State Water Board. Water from DWTP is provided primarily to the COSMUD North Stockton water system and supplemented by groundwater.

3.4.1.4 Stockton East Water District

SEWD is a wholesale water supplier that provides treated potable water to the urban water retailers within the Stockton Metropolitan Area, including COSMUD, Cal Water, and two small maintenance districts in San Joaquin County (Urban Contractors). Since 1978, SEWD has provided treated water to the City. The SEWD supply is made up of surface water from New Melones and New Hogan Reservoirs as well as some groundwater during droughts. The SEWD Dr. Joe Waidhofer Water Treatment Plant (DJWWTP) has a current capacity of 62 MGD and is located just east of Central Stockton. In addition to providing treated water supply, SEWD provides water supply to agricultural users in its service area.

¹ Based on 2020 Water Production data.

² The National Marine Fisheries Service (NMFS) is also known as the National Oceanic and Atmospheric Administration (NOAA) Fisheries.

Since the commencement of operations of the DWTP, COSMUD has reduced its use of treated potable water from SEWD. COSMUD receives treated water through a metered connection point at SEWD's water treatment facility at the intersection of East Main Street and New Water Road in the central area of Stockton.

The COSMUD supplies SEWD treated water to its South Stockton water service area. At the time of preparation of this 2020 UWMP, the COSMUD has commenced construction of the North Stockton Pipeline Hypochlorite Project that would allow SEWD water supplies to also be conveyed to the North Stockton system and combined with the DWTP-produced water supply. This project is discussed in further detail in Chapter 6 (Section 6.5.1).

3.4.2 Groundwater Supply

The COSMUD operates groundwater wells in both the North and South Stockton water service areas. Both water service areas generally rely on treated surface water year-round for their primary supply, but it is supplemented with groundwater to meet increased water demands primarily in the summer months or during dry years when available surface water supplies may be limited. Wells are also depended on for emergency supply in the event of surface water supply interruptions.

3.5 WATER SYSTEM DESCRIPTION

As described above, the COSMUD operates a water distribution system that contains two (2) water service areas: North Stockton and South Stockton. The two water service areas are connected to one another by the Stockton Aqueduct; however, water supplies in the two water service areas do not currently comeingle due to the higher pressure from SEWD in South Stockton which prevents water from North Stockton from flowing into the South Stockton area. The lowest ground surface elevation (at mean sea level) is on the western side of the system and the highest elevation (36 feet above mean sea level) is on the eastern side of the system.

Figure 3-2 displays the COSMUD existing water system including groundwater wells, reservoirs, reservoir pump stations, and water pipelines.

3.5.1 Groundwater Wells

COSMUD has 12 operational (i.e., active or standby) groundwater wells in North Stockton with design capacities ranging from 800 to 3,200 gallons per minute (gpm). The ten (10) active wells have a total production capacity of 29.1 MGD and the two (2) standby wells have a total production capacity of 4.5 MGD, for a total available capacity of approximately 33.6 MGD. Inactive wells are currently not permitted by the Division of Drinking Water (DDW). Although the total active well capacity is 29.1 MGD, actual groundwater production is less due the fact that the DWTP provides the majority of the supply in North Stockton.

COSMUD also has four (4) operational (i.e., active or standby) groundwater wells in South Stockton. The design capacities range from 1,010 to 2,800 gpm. The two (2) active wells have a total production capacity of 6.9 MGD, and the two (2) standby wells have a production capacity of 3.3 MGD. Similar to North Stockton, although the total active well capacity is 6.9 MGD, actual groundwater production is less due to the fact that the SEWD DJWWTP provides the majority of the supply in South Stockton.

3.5.2 Storage Reservoirs and Reservoir Pump Stations

The North Stockton water system has a total available storage capacity of 16.2 MG. Three 3.4 MG storage reservoirs are located at the Northwest (NW) Reservoir site and two (2) 3 MG storage reservoirs are located near Fourteen-Mile Slough (FMS). The South Stockton water system has a total available storage capacity of 6 MG, with two (2) 3 MG storage reservoirs located at Weston Ranch (WR). Each reservoir has an altitude valve which opens to fill the reservoir when the pressure in the distribution system exceeds a set-point and closes when the reservoir level exceeds a set-point.

A pump station is located at each of the reservoir sites to pump the stored water from the at-grade reservoirs into the distribution system during higher system demands. The North Stockton area has a total and firm pumping capacity of 39,750 gpm (57.2 MGD) and 31,450 gpm (45.3 MGD), respectively. The South Stockton area has a total and firm pumping capacity of 12,000 gpm (17.3 MGD) and 9,000 gpm (13.0 MGD), respectively.

3.5.3 Transmission and Distribution Pipelines

The COSMUD water transmission system consists of 16- to 48-inch diameter pipelines. The North Stockton water service area is connected to the SEWD DJWWTP via a 48-inch diameter pipeline and connected to the DWTP via a 42-inch diameter pipeline. The South Stockton water service area is connected to the SEWD DJWWTP via the 42-inch diameter pipeline. The COSMUD water distribution system consists of pipelines with diameters less than 16 inches. Most of the service laterals branch off of 8-inch and 12-inch diameter pipelines.

3.6 SERVICE AREA POPULATION, DEMOGRAPHICS AND SOCIOECONOMICS

Water management planning for the COSMUD is affected by the uncertainty in estimating future population growth and per capita water use. Actual population growth in the COSMUD water service area has been generally less than anticipated since the preparation of the 2010 and 2015 UWMPs.

The April 2020 *City of Stockton Sphere of Influence Plan/Municipal Service Review (SOI/MSR)*, prepared by the City for the San Joaquin County Local Agency Formation Commission (SJCLAFCo), presents the City's historical and projected population and housing trends. It finds that the City is experiencing a rate of slower growth, relative to San Joaquin County and the State overall. The lower growth rates apply to both population and number of housing units.

COSMUD considered the MSR findings in its water management planning. In this section, the COSMUD water service area population and demographics are presented.

3.6.1 Water Service Area Population

From 2006 to 2020, the COSMUD water service area population grew by approximately 7 percent to 184,402 by 2020. Because the COSMUD water service area does not align with the City's boundary, the 2020 population was estimated by using the DWR Population Tool. The Population Tool indicated that the total population in the COSMUD service area in 2020 was 174,389. However, the Population Tool calculates the 2020 persons per connection by creating a trend line of the Persons per Connection from 2000 to 2010 and continues that trend to the year 2020. For example, if there were a decline in the

Persons per Connection from 2000 to 2010, the tool continues that declining trend to the 2020, which may not be accurate. This is the case for the COSMUD service area. As such, the Population Tool provides for a modification of the 2020 results. Instead of using the Persons per Connection for 2020 as calculated by the Population Tool, the Persons per Connection that the Population Tool calculated for 2010 is used and multiplied by the number of connections in 2020 to determine the 2020 population. Using this allowed modification, the COSMUD service area population is calculated to be 184,402 ([41,920 single family connections in 2020 x 3.52 people per single family connection in 2010] + [5,068 multi-family connections in 2020 x 7.27 people per multi-family connection in 2010]).

The City's 2020 Water Master Plan Update³ reviewed future land uses as defined in the City's 2040 General Plan Update (GPU) and the SOI/MSR Report, which includes planned land uses in both the COSMUD and the Cal Water service areas. The SOI/MSR Report is generally consistent with the 2040 GPU and served as a guide with regard to the timing of future projects and population growth. Future planned developments listed in the SOI/MSR Report were assumed to be completed in the near-term (by 2030), and other planned projects were assumed to be built in the future (by 2040). West Yost determined which future planned development will be served by COSMUD and which future planned developments are only partially within the COSMUD water service area as part of the Water Master Plan Update effort. Projected land use is discussed in further detail in Section 3.7.2 Projected Land Use.

Many of the future planned developments include single-family and multi-family residential units. Table 3-3. Future Planned Development within the COSMUD Water Service Areas^(a) summarizes the future planned land use through 2040 in 5-year increments per the 2020 Water Master Plan Update. The COSMUD water service area is expected to have 2,100 more single-family residential units and 500 multi-family residential units by 2030 and 25,700 more single-family units and 5,800 multi-family residential units by 2040. By multiplying the 3.23 persons per household factor⁴, as reported in the SOI/MSR Report, by the number of increased households, an incremental increase in population was calculated for 2030 and 2040 and added to the 2020 population value for a total projected population for the COSMUD water service area. Interim years, 2025 and 2035, were linearly interpolated. The annualized growth rate of 1.44 percent was used to estimate the 2045 projected population since 2045 is outside the planning horizon of the City's 2040 GPU and the 2020 Water Master Plan Update. The status of planned future developments past 2040 is uncertain and therefore projected land use could not be applied to estimate the COSMUD water service area population beyond 2040. The 2045 projected population estimate will need to be refined once the status of future developments becomes available. Current and projected population in the COSMUD water service area is summarized in Table 3-2. Population – Current and Projected (DWR Table 3-1 Retail).

³ West Yost. January 2021. *City of Stockton 2020 Water Master Plan Update Chapter 3*.

⁴ Based on assumption of 3.23 persons per household, as reported in the City's SOI/MSR and in the State of California Department of Finance, 2017, E-5 Population and Housing Estimates for Cities, Counties and the State – January 1, 2011 – 2017.

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

| Population Served | 2020 | 2025 | 2030 | 2035 | 2040 | 2045(opt) |
|---|---------|---------|---------|---------|---------|-----------|
| | 184,402 | 188,601 | 192,800 | 239,380 | 285,960 | 307,150 |
| NOTES: The 2020 population is based on the DWR Population Tool, using the allowed modification of using the 2010 Persons per Connection to estimate the 2020 population. The annualized growth rate of 1.44 percent was used to estimate the 2045 projected population since 2045 is outside the planning horizon of the City's 2040 GPU and the 2020 Water Master Plan Update. | | | | | | |

3.6.2 Water Service Area Demographics and Socioeconomics

The California Water Code 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 has not been studied. Therefore, the following social, economic, and demographic information is being provided to comply with the new regulation. The information was derived from the US Census Bureau's profile of Stockton for 2014-2018⁵, and is assumed to sufficiently apply to the City's service area.

- The average number of people per household in the five-year period analyzed was 3.15
- The median household income in Stockton was \$51,318, while 20.5 percent of all individuals and 28 percent of youth under the age of 18 lived in poverty
- The average unemployment rate was 10.2 percent
- The owner-occupied housing unit rate was 47.5 percent, with a median home value of \$248,000
- The median gross rent was \$1,059 per month
- The median age was 32.7 years
- Of persons 25 years or older in Stockton, 76.4 percent had earned at least a high school diploma or equivalent and 17.7 percent had earned a bachelor's degree or higher
- Of persons under 65 years of age, 10 percent had a disability
- Of the non-institutionalized civilian population, 8.1 percent did not have health insurance
- Almost 86.5 percent of households had a computer, and 75.7 percent had a broadband internet subscription
- By race/ethnicity, 44.7 percent of people were White, 11.8 percent were Black, 0.7 percent were American Indian or Alaska Native, 21.6 percent were Asian, 0.8 percent were Hawaiian Native or Pacific Islander, 10.8 percent were two or more races, 9.5 percent were some other race. Of the total City population, 42.1 percent were Hispanic, or Latino and 57.9 percent were non-Hispanic or non-Latino

⁵ United States Census Bureau, American Community Survey, 2014-2018 ACS 5-Year Data Profile for Stockton, CA.

- Of Stockton residents, 25.9 percent were foreign born, and 45.9 percent of people age five years and older spoke a language other than English at home

3.7 LAND USES WITHIN SERVICE AREA

This section presents the existing and projected land use for the COSMUD service area.

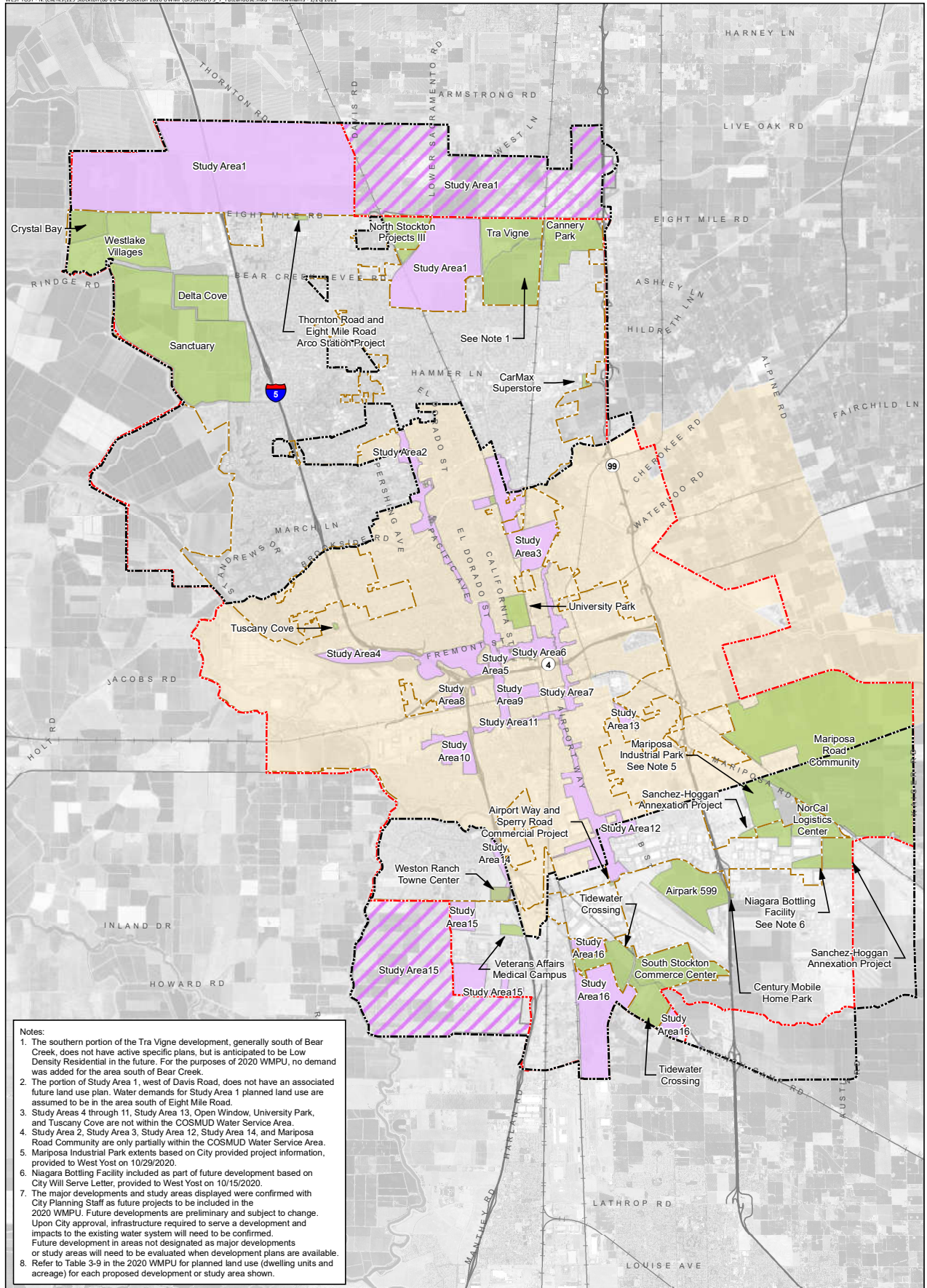
3.7.1 Existing Land Use

In general, North Stockton is primarily comprised of residential land uses, and South Stockton is mostly comprised of industrial and commercial uses with some residential uses which are primarily located in the WR development area.

3.7.2 Projected Land Use

As part of the 2020 Water Master Plan Update, projected land use for the COSMUD water service area was evaluated through 2040. Future growth and land uses are defined in the City's 2040 GPU, which summarizes anticipated development within sixteen Study Areas. These areas have been specifically identified as being most likely to develop by 2040. In addition to these projects, the City has identified, or is actively working with several project proponents to identify, future development areas that are both within existing City Limits or outside of City Limits (but within the Sphere of Influence) via the SOI/MSR Report. The SOI/MSR Report, which is generally consistent with the 2040 GPU, and includes other specific projects known to the City, defines the anticipated level of development and municipal service needs for near-term (2030) development. The 2040 GPU and SOI/MSR Report indicates a total of 40,900 new residential dwelling units city-wide. With respect to timing, the SOI/MSR Report acted as a guide and projects contained in the SOI/MSR Report were assumed to be completed in the near-term (by 2030), and other planned projects were assumed to be built in the future (by 2040).

Figure 3-3 shows the approximate locations and boundaries for the Study Areas and future development areas in the COSMUD service area. Approximately 31,442 planned residential dwelling units are planned in the COSMUD water service area, which is about 76 percent of the total planned 41,152 residential dwelling units City-wide. Portions of Study Areas located outside the General Plan SOI (e.g., portions of Study Areas 1 and 15) are not included in the 2020 UWMP. Similarly, areas within the General Plan SOI which are not designated as Study Areas or planned development projects are not included in the 2020 UWMP as development of these areas was not anticipated in the 2040 GPU. Any future development in these areas will need to be evaluated when land use plans are developed to determine the impacts on the COSMUD water system and identify any required water system improvements.



- Study Area Within City's Sphere of Influence
- Study Area Outside of City's Sphere of Influence
- Major Development
- Cal Water Service Area
- COSMUD Water Service Area
- City of Stockton Limits
- City of Stockton Sphere of Influence

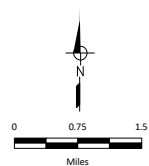


Figure 3-3
Summary of
Future Developments
 City of Stockton
 2020 UWMP

The Mariposa Road Community in South Stockton is a large future development area that will likely consist of single family residential, multi-family residential, parks, and commercial land uses. The development area's previous entitlement has expired, and therefore it is not guaranteed that this project area will actually be developed or be developed as previously planned. For the purposes of this UWMP, the Mariposa Road Community is assumed to be developed based on the most recent land use plan by 2040. This future development is one of the largest drivers for additional water demand within the COSMUD South Stockton water service area. Further, for the purposes of this UWMP, the entire Mariposa Road Community area is conservatively assumed to be served by COSMUD, even though this development area is located within both the COSMUD water service area and the Cal Water service area.

Table 3-3. Future Planned Development within the COSMUD Water Service Areas^(a) summarizes the future planned development within the COSMUD water service area by land use designation. North Stockton is anticipated to have the largest increase in residential development. The largest planned development is the Sanctuary Project in North Stockton. It will consist of single-family residential, multi-family residential, park, and commercial land uses. In addition to the Mariposa Road Community, South Stockton will see an increase in commercial and industrial development in the near-term and in the future with planned projects such as the NorCal Logistics Center and South Stockton Commerce Center.

| Table 3-3. Future Planned Development within the COSMUD Water Service Areas^(a) | | | |
|--|--------------|---|--|
| Future Land Use Designation | Units | Near-Term (2030) Total Development | Future (2040) Total Development |
| North Stockton | | | |
| Single Family | DU | 2,100 | 16,700 |
| Multi Family | DU | 500 | 4,212 |
| Commercial | Acres | 23 | 167 |
| Industrial | Acres | 0 | 0 |
| Parks | Acres | 41 | 451 |
| South Stockton | | | |
| Single Family | DU | 0 | 8,955 ^(b) |
| Multi Family | DU | 0 | 1,575 ^(b) |
| Commercial | Acres | 55 | 273 |
| Industrial | Acres | 1,354 | 1,753 |
| Parks | Acres | 9 | 224 |
| <p>(a) Based on the Study Areas and future development plans identified in the 2040 General Plan and April 2020 SOI/MSR Report and confirmed with the City's Community Development Department in July 2020.</p> <p>(b) All of the Single Family Residential and most of the Multi-Family Residential is associated with the Mariposa Road Community.</p> <p>DU = Dwelling Unit</p> | | | |

CHAPTER 4

Customer Water Use

This chapter describes and quantifies the COSMUD past, current, and projected potable water use. Water demands are provided by customer sector. Water distribution system water losses, future passive water savings, and low-income household water use are quantified. Water demand projections are based on the projected growth within the COSMUD water service area. Accurately tracking and reporting current water demands allows COSMUD to properly analyze the use of their water resources and conduct good resource planning for the future.

4.1 NON-POTABLE VERSUS POTABLE WATER USE

Potable water is water that typically has had various levels of treatment and disinfection and is safe to drink. The COSMUD provides treated potable water to customers within its water service area. The COSMUD treats a large portion of its water supply, from the San Joaquin River and supplemented by WID, at its DWTP. It purchases a portion of its treated water supply from SEWD.

Recycled water is municipal wastewater that has been treated to a specified quality for beneficial reuse. As discussed in Chapter 6, the COSMUD operates the City's Regional Wastewater Control Facility (RWCF) and discharges its treated wastewater effluent into the San Joaquin River in the central City area. The COSMUD does not distribute recycled water for use within its service area.

Raw water is untreated water that is used in its natural state or with minimal treatment. The COSMUD does not deliver raw water to any customers in its service area.

4.2 WATER USE BY SECTOR

This section describes the COSMUD past, current, and projected water use by water use sector, as listed in Water Code §10631(d) and defined in the DWR Guidebook. These classifications were used to analyze current consumption patterns among the various types of COSMUD water customers. Each water use sector is listed and defined below.

- **Single Family Residential:** A single-family dwelling unit. A lot with a free-standing building containing one dwelling unit that may include a detached secondary dwelling.
- **Multi-Family 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.
- **Other:** Any other water demand that is not adequately described by the water sectors defined above. Unlike previous UWMPs, system water losses are not to be reported in the “Other” category.

The COSMUD does not have any current plans to use water for groundwater recharge, saline water intrusion barriers, agricultural irrigation, wetlands, or wildlife habitat. As described in Chapter 6 (Section 6.6.1.2), the City is evaluating the potential of a future groundwater banking project at the DWTP site to optimize use of its Water Right Permit 21176. However, because the project is in the preliminary evaluation stage, it is premature to include water use projections for it.

4.2.1 Historical Water Use

The COSMUD historical water use among its water use sectors is reported in Table 4-1. These are the same values reported in the COSMUD 2010 and 2015 UWMPs.

| Table 4-1. Historical Water Use by Water Use Sector | | | |
|--|---------------------------|---------------------------|---------------------------|
| Water Use Sector | 2005^(a) | 2010^(a) | 2015^(b) |
| Single Family | 20,082 | 18,639 | 13,764 |
| Multi-Family | 3,874 | 3,047 | 2,854 |
| Commercial and Institutional | 5,471 | 4,471 | 3,652 |
| Irrigation | 3,012 | 3,392 | 2,152 |
| Industrial | (c) | 624 | 723 |
| Metered to San Joaquin County | 531 | 163 | 1,476 |
| Other ^(d) | 180 | 53 | -- |
| Losses | 1,530 | 3,107 | 1,699 |
| Total | 34,680 | 33,496 | 26,320 |
| <p>(a) Source: COSMUD 2010 UWMP Table 6</p> <p>(b) Source: COSMUD 2015 UWMP Table 3-2</p> <p>(c) In 2010, the Industrial water use was included in the Commercial and Institutional water use category.</p> <p>(d) Other includes rental meters used for construction, system maintenance, and street sweeping.</p> <p>Notes: Units are in acre-feet (AF).</p> | | | |

4.2.2 Current Water Use

The COSMUD actual water use for the year 2020 is reported in Table 4-2. There are no existing uses for saline barriers, groundwater recharge, conjunctive use, or raw water within the COSMUD water service area.

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

| Use Type | 2020 Actual | | |
|--|--|--|---------------|
| Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool | Additional Description (as needed) | Level of Treatment When Delivered Drop down list | Volume* |
| Add additional rows as needed | | | |
| Single Family | | Drinking Water | 15,758 |
| Multi-Family | | Drinking Water | 3,030 |
| Commercial | Includes Institutional/Governmental Use Type | Drinking Water | 4,700 |
| Industrial | | Drinking Water | 533 |
| Industrial | Walnut Plant Area | Drinking Water | 176 |
| Landscape | | Drinking Water | 3,255 |
| Sales/Transfers/Exchanges to other agencies | SEWD water delivered to two San Joaquin County water systems | Drinking Water | 1,830 |
| Other Potable | Hydrant Meters and Jumpers | Drinking Water | 132 |
| Losses | Within water distribution system | Drinking Water | 4,991 |
| TOTAL | | | 34,404 |
| * Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | |
| NOTES: Units are in acre-feet (AF). | | | |

4.2.3 Projected Water Use

The COSMUD water demand projections from 2025 through 2045 are reported in Table 4-3. Projected future water demands are based on water demand projections developed for the City's recent Water Master Plan Update¹ and have been estimated based on the anticipated growth within the COSMUD water service area as defined by the Envision Stockton 2040 General Plan, adopted by the Stockton City Council

¹ West Yost Associates, January 2021. City of Stockton Water Master Plan Update.

in December 2018. Future study areas and planned development in the COSMUD water service area were reviewed and confirmed with the City's Community Development Department. Water demand projections in this UWMP include the entire COSMUD water service area, including the Walnut Plant area in Central Stockton. Projected water demands for 2045 are assumed to be the same as the projected water demands in 2040 since the status of future planned developments is uncertain past 2040.

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* | | | | |
|--|--|---|---------------|---------------|---------------|---------------|
| | | Report To the Extent that Records are Available | | | | |
| <u>Drop down list</u> May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool | | 2025 | 2030 | 2035 | 2040 | 2045 (opt) |
| Add additional rows as needed | | | | | | |
| Single Family | | 15,782 | 16,066 | 19,259 | 22,451 | 22,451 |
| Multi-Family | | 2,927 | 2,976 | 3,494 | 4,012 | 4,012 |
| Commercial | Includes Institutional/Governmental Use Type | 4,793 | 4,856 | 5,149 | 5,442 | 5,442 |
| Industrial | | 3,192 | 5,592 | 5,871 | 6,150 | 6,150 |
| Industrial | Walnut Plant Area | 205 | 205 | 205 | 205 | 205 |
| Landscape | | 3,162 | 3,208 | 3,786 | 4,363 | 4,363 |
| Sales/Transfers/Exchanges to other Suppliers | SEWD water delivered to two San Joaquin County water systems | 1,830 | 1,830 | 1,830 | 1,830 | 1,830 |
| Losses | Within water distribution system | 2,898 | 3,145 | 3,568 | 3,991 | 3,991 |
| TOTAL | | 34,789 | 37,878 | 43,161 | 48,444 | 48,444 |
| * Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | | | | |
| NOTES: Units are in acre-feet (AF). Assumed that SEWD water deliveries to San Joaquin County "islands" and the COSMUD Walnut Plant Area will remain constant for projected water use. The projected water use for the Walnut Plant Area is estimated as the 5-year average of SEWD water delivery from 2015 to 2019 to the Walnut Plant Area. | | | | | | |

4.2.3.1 Characteristic Five-Year Water Use

The estimated water use for the next five years, following 2020, is summarized in Table 4-4. Projected water demands for 2021 through 2024 were estimated as a linear interpolation between the 2020 consumption by use type, reported in Table 4-2, and the 2025 projected water use, reported in Table 4-3. The characteristic five-year water use does not assume drought conditions and will be incorporated into the Drought Risk Assessment, further discussed in Chapter 7.

Table 4-4. Five-Year Water Use

| Water Use Sector | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---------------|---------------|---------------|---------------|---------------|
| Single Family | 15,763 | 15,768 | 15,773 | 15,777 | 15,782 |
| Multi-Family | 3,009 | 2,989 | 2,968 | 2,947 | 2,927 |
| Commercial (and Institutional/Governmental) | 4,718 | 4,737 | 4,756 | 4,774 | 4,793 |
| Industrial | 1,064 | 1,596 | 2,128 | 2,660 | 3,192 |
| Industrial (Walnut Plant Area) | 182 | 188 | 193 | 199 | 205 |
| Landscape | 3,236 | 3,218 | 3,199 | 3,181 | 3,162 |
| Sales/Transfers/Exchanges to Other Agencies | 1,830 | 1,830 | 1,830 | 1,830 | 1,830 |
| Losses | 4,678 | 4,233 | 3,788 | 3,343 | 2,898 |
| Total | 34,481 | 34,558 | 34,635 | 34,712 | 34,789 |

Notes: Units are in acre-feet (AF).

4.3 TOTAL WATER USE

Table 4-5 summarizes the actual and projected potable water demands reported in Table 4-2 and Table 4-3, respectively.

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

| | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 (opt) |
|---|---------------|---------------|---------------|---------------|---------------|---------------|
| Potable Water, Raw, Other Non-potable <i>From Tables 4-1R and 4-2 R</i> | 34,404 | 34,789 | 37,878 | 43,161 | 48,444 | 48,444 |
| Recycled Water Demand ¹ <i>From Table 6-4</i> | 0 | 0 | 0 | 0 | 0 | 0 |
| Optional Deduction of Recycled Water Put Into Long-Term Storage ² | | | | | | |
| TOTAL WATER USE | 34,404 | 34,789 | 37,878 | 43,161 | 48,444 | 48,444 |
| ¹ Recycled water demand fields will be blank until Table 6-4 is complete ² Long term storage means water placed into groundwater or surface storage that is not removed from storage in the same year. Supplier may deduct recycled water placed in long-term storage from their reported demand. This value is manually entered into Table 4-3. | | | | | | |
| NOTES: Units are in acre-feet (AF). The City does not use recycled water for beneficial use within its service area. | | | | | | |

At the time of preparation of this UWMP, the State Water Board is in the process of developing urban water use efficiency standards. The City plans to adopt a supplement to this 2020 UWMP by January 1, 2024. Depending on adopted standards and its customers' aggregate water use totals, future water use projections may be revised. The supplement will include a description of water demand management measures that COSMUD anticipates to implement to achieve its urban water use objectives by January 1, 2027.

4.4 DISTRIBUTION SYSTEM WATER LOSSES

System losses are the difference between the actual volume of water treated and delivered into the distribution system and the actual metered consumption. Such apparent losses are always present in a water system due to pipe leaks, unauthorized connections or use; faulty meters; unmetered services such as fire protection and training, and system and street flushing.

The COSMUD water distribution system consists of approximately 584 miles of distribution pipelines and transmission mains. COSMUD uses the American Water Works Association (AWWA) Water Audits and Loss Control Programs method to annually evaluate its distribution system losses. The water audit is an accounting exercise that tracks all sources and uses of water within a water system over a calendar year.

Table 4-6 summarizes the water system losses as reported in the AWWA water audits for the last five years starting in January 2015. A copy of the COSMUD water audit worksheets for the last five years is provided in Appendix E.

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} |
|--|-------------------------------------|
| 01/2015 | 1,703 |
| 01/2016 | 2,609 |
| 01/2017 | 2,320 |
| 01/2018 | 2,847 |
| 01/2019 | 2,994 |
| 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: Units are in acre-feet (AF). | |

At the time of preparation of this UWMP, DWR and the State Water Board are in the process of adopting water loss standards. This is discussed further in Chapter 9.

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 and Table 4-4 include water use for single family and multi-family residential housing needed for low-income households, as identified in the City's Housing Element². A low-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 City's Housing Element, 43 percent of the City and 37 percent of the San Joaquin County are low income. Table 4-7 verifies that the expected water use for low income housing is included in the projected water demands in this UWMP. The estimate of the projected low-income single family and multi-family water demand in 2045 is 10,300 AF. This low-income water demand is estimated by applying the 43 percent (to represent the low-income residential dwelling units) times the projected 2040 residential water demand within the COSMUD water service area. These projected low-income water demand projections are included in Table 4-3 and Table 4-4.

² City of Stockton. April 2016. City of Stockton 2015 – 2023 Housing Element Background Report

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

| | |
|---|--|
| Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) <i>Drop down list (y/n)</i> | Yes |
| 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. | California Code of Regulations, Title 23 Waters, Division 2 DWR, Chapter 2.7 Model Water Efficient Landscape Ordinance (MWELO), updated 2015. ^(a) |
| Are Lower Income Residential Demands Included In Projections? <i>Drop down list (y/n)</i> | Yes |
| NOTES: (a) MWELO applies only to irrigation demand projections. | |

4.6 CLIMATE CHANGE CONSIDERATIONS

Climate change has the potential to alter local climatic patterns and meteorology. A Climate Action Plan (CAP)³ was prepared for the City of Stockton in 2014 to identify sectors with the highest greenhouse gas (GHG) emissions and target emissions reduction measures to these sectors. The CAP provides a plan for the City to successfully implement select emissions reduction measures.

The CAP finds that water demands will likely be impacted by extreme heat, which will likely result in reduced soil moisture and increased fire hazards. Increased irrigation demand is anticipated to occur with temperature rise, increased evaporative losses due to warmer temperature, and a longer growing season. The potential impacts of climate change in the City's water demand projections were considered as part of the Water Master Plan, which revised the City's water use factors. These water demand projections are reflected in Section 4.2.3.

Minimizing groundwater pumping during normal and above-normal years would assure adequate stored water supply to mitigate the effects of climate change on water demand. The potential impacts of climate change on the COSMUD water supplies are described in Chapter 6.

³ ICF International, 2014. City of Stockton Climate Action Plan.

CHAPTER 5

SB X7-7 Baselines, Targets, and 2020 Compliance

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

COSMUD’s compliance with SB X7-7 was first addressed in its 2010 UWMP. The COSMUD baseline per capita water use was determined, and urban water use targets for 2015 and 2020 were established and adopted. Because 2010 census data was not available during the preparation of the 2010 UWMP, SB X7-7 included a provision that an urban water supplier could update its 2020 urban water use target in its 2015 UWMP. The urban water supplier could use a different target method than was used in 2010. As discussed below, the COSMUD updated its baseline and target in 2015.

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

In this Chapter, the COSMUD demonstrates that it has achieved its 2020 target per capita water use. Compliance with the urban water use target requirement is verified in the SB X7-7 2020 Compliance Form, which is included as Appendix F in this UWMP.

5.1 OVERVIEW AND BACKGROUND

COSMUD’s compliance with SB X7-7 was first addressed in its 2010 UWMP. Actual water use data and San Joaquin Council of Governments (SJCOC) population data were used to calculate per capita water use. The COSMUD baseline per capita water use was determined, and urban water use targets for 2015 and 2020 were established and adopted.

SB X7-7 included a provision that an urban water supplier may update its 2020 urban water use target in its 2015 UWMP and may use a different target method than was used in 2010. Also, the SB X7-7 methodologies developed by DWR in 2016 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 COSMUD updated its population, baselines, and targets to reflect 2010 Census data. The COSMUD also demonstrated that it successfully achieved its 2015 Interim Target and confirmed its 2020 target.

In this 2020 UWMP, the DWR Population Tool was used and modified to estimate the COSMUD service area population because the 2020 Census results were not available for inclusion in this UWMP update. Using this population estimate, the COSMUD verifies that it achieved its 2020 target per capita water use. The potential difference between the modified DWR Population Tool estimates and the eventual final 2020 Census results is not believed to impact the fundamental conclusions of meeting SB X7-7 requirements.

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 could 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 COSMUD delivered no recycled water. Therefore, the COSMUD baseline GPCD was calculated over a 10-year period. In its 2015 UWMP, the 10-year baseline period that COSMUD selected was 1998 through 2007 (see Appendix F).

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 COSMUD 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
- **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 COSMUD selected Method 3 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 COSMUD adjusted its baseline and target GPCD to reflect its updated population estimates based on 2010 Census data. To calculate the COSMUD compliance year GPCD and compare it to the 2020 target, the 2020 population was estimated. Details of determining 2020 service area population are provided in Section 5.3.

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

5.3 SERVICE AREA POPULATION

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

The DWR Population Tool was used to estimate the service area population as shown in Table 5-1. The Population Tool indicated that the total population in the COSMUD service area in 2020 was 174,389. However, the Population Tool calculates the 2020 persons per connection by creating a trend line of the Persons per Connection from 2000 to 2010 and continues that trend to the year 2020. For example, if there were a decline in the Persons per Connection from 2000 to 2010, the tool continues that declining

trend to the 2020, which may not be accurate. This is the case for the COSMUD service area. As such, the Population Tool provides for a modification of the 2020 results. Instead of using the Persons per Connection for 2020 as calculated by the Population Tool, the Persons per Connection that the Population Tool calculated for 2010 is used and multiplied by the number of connections in 2020 to determine the 2020 population. Using this allowed modification, the COSMUD service area population is calculated to be 184,402 ([41,920 single family connections in 2020 x 3.52 people per single family connection in 2010] + [5,068 multi-family connections in 2020 x 7.27 people per multi-family connection in 2010]) as shown in Table 5-2.

Results from the Population Tool are included in Appendix F.

Table 5-1. Method for 2020 Population Estimate (SB X7-7 Compliance Table 2)

| Method Used to Determine 2020 Population (may check more than one) | |
|---|---|
| <input type="checkbox"/> | 1. Department of Finance (DOF) or American Community Survey (ACS) |
| <input type="checkbox"/> | 2. Persons-per-Connection Method |
| <input checked="" type="checkbox"/> | 3. DWR Population Tool |
| <input type="checkbox"/> | 4. Other DWR recommends pre-review |
| NOTES: The DWR Population Tool allows for the 2010 Persons per Connection to be used to determine the 2020 population. This modification was used to estimated the COSMUD 2020 water service area population. | |

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

| 2020 Compliance Year Population | |
|---------------------------------|---------|
| 2020 | 184,402 |

5.4 GROSS WATER USE

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

Annual gross water use for the baseline periods and 2020 are summarized in Appendix F. The baseline values reported in Appendix F are the same as documented in the COSMUD 2015 UWMP. The COSMUD 2020 actual gross water use for Calendar Year 2020 is 34,404 AF as presented in Chapter 4.

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 COSMUD updated its population data, adjusted its baseline and confirmed its 2020 target in its 2015 UWMP. The COSMUD 10-year base daily per capita water use is 178 GPCD. Using Method 3 for 2020 water use target calculation as described in Section 5.2, the COSMUD confirmed 2020 compliance target is 165 GPCD. The COSMUD baseline and target per capita water use are summarized in Table 5-3 below.

Table 5-3. Baselines and Targets Summary From SB X7-7 Verification Form (DWR Table 5-1)

| Baseline Period | Start Year * | End Year * | Average Baseline GPCD* | Confirmed 2020 Target* |
|--|--------------|------------|------------------------|------------------------|
| 10-15 year | 1998 | 2007 | 178 | 165 |
| 5 Year | 2005 | 2009 | 179 | |
| *All cells in this table should be populated manually from the supplier's SBX7-7 Verification Form and reported in Gallons per Capita per Day (GPCD) | | | | |
| NOTES: Refer to Table 4-1 or Appendix F SB X7-7 Verification Form in the 2015 UWMP. | | | | |

5.6 2020 COMPLIANCE DAILY PER CAPITA WATER USE

In Sections 5.3 and 5.4, the COSMUD 2020 population and gross water use are presented, respectively. The COSMUD calculated its actual 2020 water use for the 2020 calendar year in accordance with Methodology 4 of DWR's *Methodologies* document. As shown in Table 5-4, urban per capita water use in 2020 was 158 GPCD, which is below the confirmed 2020 water use target of 165 GPCD. Therefore, the COSMUD 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 F.

Table 5-4. 2020 Compliance From SB X7-7 2020 Compliance Form (DWR Table 5-2)

| 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) | | |
| 158 | 0 | 0 | 165 | YES |
| *All cells in this table should be populated manually from the supplier's SBX7-7 2020 Compliance Form and reported in Gallons per Capita per Day (GPCD) | | | | |
| NOTES: Refer to Appendix F SB X7-7 2020 Compliance Form. | | | | |

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

The COSMUD 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 COSMUD water service area was significantly reduced as compared to baseline years as a result of increased water conservation efforts by the COSMUD and its customers.

5.7 REGIONAL ALLIANCE

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

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CHAPTER 6

Water Supply Characterization

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

6.1 WATER SUPPLY ANALYSIS OVERVIEW

The City's existing water supplies consist of the following:

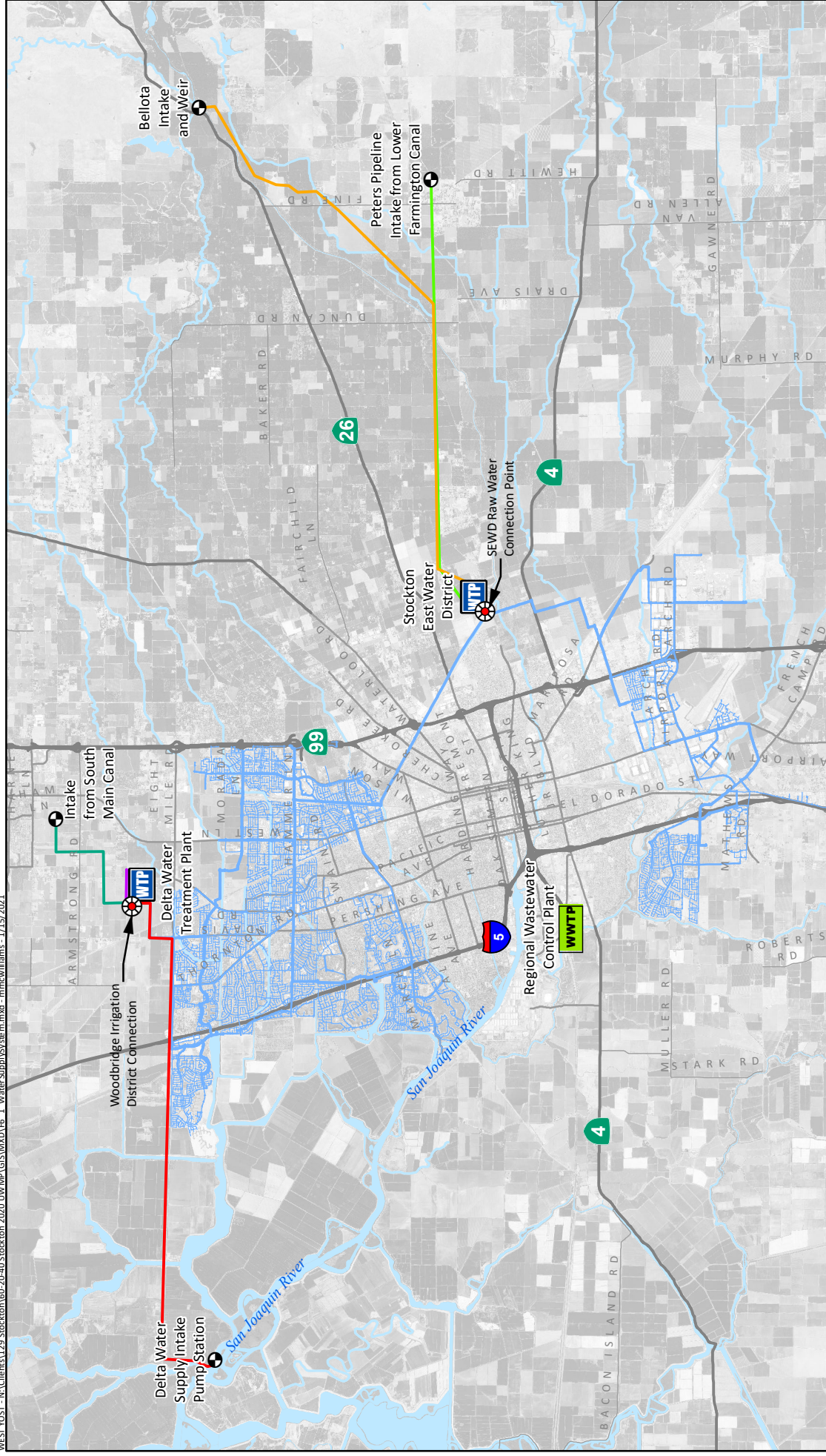
- Surface water from the San Joaquin River that is diverted at the IPS on Empire Tract located in the Sacramento-San Joaquin Delta (Delta) and treated at the City's DWTP, supplemented by surface water from the Mokelumne River diverted and conveyed by Woodbridge Irrigation District (WID), and treated at the City's DWTP, when the City's San Joaquin River supplies are curtailed
- Treated surface water from the Stockton East Water District (SEWD) conveyed from the New Melones (Stanislaus River) and New Hogan (Calaveras River) Reservoirs
- Groundwater pumped by COSMUD from City-owned and operated wells in North Stockton and South Stockton from the underlying Eastern San Joaquin Groundwater Subbasin

Figure 6-1 displays the COSMUD connections to surface water and purchased water supply facilities.

Due to differing disinfection processes that present water quality issues related to low chlorine residual levels and the potential for formation of disinfection byproducts, COSMUD provides water from the DWTP only in its North Stockton water distribution system. Water from SEWD can be conveyed to both the North and South Stockton distribution systems. SEWD also supplies the COSMUD Walnut Plant service area that is surrounded by the Cal Water system through two interconnects. Cal Water conveys SEWD supply to the Walnut Plant service area via a wheeling agreement with COSMUD. Water supplies from local groundwater wells are used to supply both the COSMUD North and South Stockton water service areas.

At time of preparation of this UWMP, COSMUD is in the process of implementing the North Stockton Pipeline Hypochlorite Facility that will allow SEWD supplies to be conveyed to the North Stockton system and combined with DWTP-produced water supply. The project is discussed in further detail in Section 6.5.1.

In this section, the management of each supply in correlation with other supplies are discussed, along with the measures that the City has taken to acquire and develop planned sources of water. Anticipated availability of the City's water supplies under a normal water year is provided in this chapter. 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 described in detail in Chapter 7 of this UWMP, along with the basis of those estimates.



- Wilkerson Lateral
- Pixley Pipeline
- DWTP Raw Water Pipeline
- Bellota Raw Water Pipeline
- Peters Raw Water Pipeline
- Distribution System Pipelines

- WTP Water Treatment Plant
- WWTP Regional Wastewater Control Plant
- ⊗ Raw Water Connection to WTP
- ⊗ Raw Water Intake

Notes:
 1. Locations and alignments are approximate and based on the Stockton East Water District Urban Water Management Plan and available information on the Delta Water Supply Project.

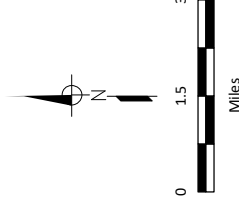


Figure 6-1
Existing Surface Water
and Purchased Water
Supply System Map

City of Stockton
 2020 UWMP

6.2 WATER SUPPLY CHARACTERIZATION

6.2.1 Purchased or Imported Water

The City purchases treated potable water from SEWD and untreated surface water from WID as described in this section.

6.2.1.1 Stockton East Water District

Stockton East Water District is a wholesale water supplier that provides treated potable water to the urban water retailers within the Stockton Metropolitan Area, including COSMUD, Cal Water, and two small maintenance districts in San Joaquin County (Urban Contractors). The COSMUD point of connection to SEWD is shown on Figure 6-1. SEWD also supplies irrigation water to agricultural users in San Joaquin County. SEWD receives and treats surface water from New Melones Reservoir and New Hogan Reservoir through agreements with the United States Bureau of Reclamation (USBR). SEWD has filed several water right applications to divert excess wet weather flow from the Calaveras River, Little Johns Creek, and other tributaries. The applications are currently undergoing the permitting process with the State Water Resources Control Board. Although SEWD has groundwater wells, it has not historically pumped groundwater for municipal and industrial use, except during drought and low reservoir levels, and does not plan to do so on a regular basis in the future unless it is required in an emergency situation.¹

To alleviate severe groundwater overdraft in the region, SEWD constructed the DJWWTP with a capacity of 30 MGD and entered into an agreement (Original Contract) with the urban water supplies to share the cost and water deliveries from the DJWWTP in the mid-1970s. Since that time, additional planning studies demonstrated the need for additional supplemental water supply to meet the future needs of the Stockton Metropolitan Area and the Original Contract was amended in 1987 (Second Amended Contract) (included in Appendix G of this UWMP) to expand SEWD infrastructure and share water deliveries and costs. The DJWWTP has a current capacity of 62 MGD and is located just east of Central Stockton.

In April 2012, prior to the commencement of operation of the DWTP, the Urban Contractors entered into an allocation agreement to revise the provisions for water deliveries and cost sharing in the Second Amended Contract. That allocation agreement was replaced by an October 2019 Reconciliation Agreement (included in Appendix G of this UWMP) between the Urban Contractors. The 2019 Reconciliation Agreement recognizes the supply allocations, varying use, and financial obligations between the Urban Contractors and SEWD. The 2019 Reconciliation Agreement is currently in effect.

6.2.1.1.1 New Hogan Reservoir

The New Hogan Reservoir has a water storage capacity of 317,000 AF. It receives its water supply primarily from rain runoff fed by the Calaveras River. The United States Army Corps of Engineers operates the dam and determines flood control releases when the New Hogan Project is in flood control mode. SEWD is the Watermaster and determines New Hogan releases for irrigation and municipal use for itself and Calaveras County Water District (CACWD) during non-flood control periods.

Pursuant to an August 25, 1970 Allocation Contract between the USBR, SEWD, and CACWD, 56.5 percent of the yield from New Hogan Reservoir is allocated to SEWD, and the remaining 43.5 percent to CACWD,

¹ SEWD, 2015 UWMP, Section 4.

subject only to storage and release of water for flood control. The total annual supply available for both SEWD and CACWD is approximately 84,100 AFY in normal water years. The contract also provides that any water not used by CACWD can be used by SEWD. At the current level of CACWD use, the SEWD can rely on about 83,000 AFY of supply from the New Hogan Project in normal water years under safe yield operation. However, if CACWD exercises its percentage entitlement (43.5 percent), the available supply from this source would be reduced.

6.2.1.1.2 New Melones Reservoir

The New Melones Reservoir has a water storage capacity of 2.4 million AF and is a part of the Central Valley Project (CVP). It receives water primarily from rain and snowmelt runoff and is fed by the Stanislaus River. Pursuant to a December 1983 contract with USBR, SEWD and Central San Joaquin Water Conservation District (CSJWCD) are entitled to up to 155,000 AF of water annually. SEWD is allocated up to 75,000 AFY. Water allocation amounts are based on the March-September water forecast and the February end of month storage in the New Melones Reservoir each year, to be used for municipal, industrial, or agricultural use. This water is subject to cutbacks based on the USBR's overall CVP operations.

6.2.1.1.3 COSMUD Water Supply from SEWD

Historically, from 1977 to 2012, SEWD was the sole source of treated surface water to COSMUD and provided a significant portion of total water supply. The COSMUD South Stockton water service area currently receives water from SEWD and groundwater supplies. In 2020, COSMUD use of SEWD water was about 7,000 AF, about 20 percent of the COSMUD total supply.

The startup and operation of the DWTP in 2012 has provided the COSMUD with a new and reliable source of surface water under Water Right Permit 21176 for current and future use within its service area. In addition, COSMUD will continue to rely on SEWD supplies for a portion of its water supply portfolio provided under the Second Amended Contract (expires in 2035), particularly as development continues in South Stockton. Second Amended Contract Section 3 Renewal: Continued Service entitles COSMUD continued service delivery under then current or mutually-agreeable terms.

For the North Stockton system, the construction of the North Stockton Pipeline Hypochlorite Facility in 2021, which is designed to improve chloramination disinfection processes, will allow for the integration of DWTP and SEWD water supplies. Once the system is operational, additional SEWD water deliveries into the North Stockton system, particularly in the summer months, will provide for a reduction in groundwater pumping and help manage the sustainability of local groundwater resources.

6.2.1.2 Woodbridge Irrigation District

In 2008, the City executed a 40-year purchase agreement with WID for 6,500 AFY, with an option to purchase additional amounts in a given year, for municipal and industrial water use (a copy of the agreement is included in Appendix G of this UWMP). WID provides raw water supply to both COSMUD and the City of Lodi. In addition to providing raw water to the two cities, WID provides irrigation supply to agricultural users in its service area. WID's water supply is from the Mokelumne River.

This water augments supply to the DWTP if diversions from the San Joaquin River water are not available due to environmental restrictions. The water is conveyed to the DWTP through WID's Wilkerson Canal and Pixley lateral pipeline for treatment and conveyance to the water distribution system, as shown on Figure 6-1.

The City's water supply from WID may potentially increase as discussed in Section 6.5.2.

6.2.1.3 Actual and Projected Water Supplies from Purchased or Imported Water Supplies

Actual water supplies for COSMUD from SEWD and WID in 2020 are provided in Table 6-1. The COSMUD projected normal year water supplies from these sources are shown in Table 6-2 in 5-year increments from 2025 to 2045. The availability of these sources under single dry, five-year droughts, and other water year conditions are discussed in Chapter 7.

| Table 6-1. Purchased or Imported Water Supplies - 2020 Actual | |
|--|--|
| Water Agency | Existing (2020) Water Supply Volume |
| SEWD | 6,939 |
| WID | 8,657 |
| Notes: Units are in acre-feet (AF). | |

| Table 6-2. Purchased or Imported Water Supplies - Projected | | | | | |
|---|--------------------------------------|---------------|---------------|---------------|---------------|
| Water Agency | Projected Water Supply Volume | | | | |
| | 2025 | 2030 | 2035 | 2040 | 2045 |
| SEWD ^(a) | 24,300 | 24,300 | 24,300 | 24,300 | 24,300 |
| WID ^(b) | 6,500 | 13,000 | 13,000 | 13,000 | 13,000 |
| Total | 30,800 | 37,300 | 37,300 | 37,300 | 37,300 |
| Notes: Units are in acre-feet (AF). | | | | | |
| (a) Based on the COSMUD portion (about one third) of SEWD's available supplies for its urban contractors. See discussion in Section 6.2.1.1.3 for assumed supply for 2035 and beyond. | | | | | |
| (b) Assumes an additional 6,500 AFY of WID supply will become available to COSMUD by 2030. | | | | | |

As described in Chapter 7, surface water supply curtailments are possible in dry years and may be offset with additional groundwater use and/or demand reduction through implementation of the City's Water Shortage Contingency Plan as described in Chapter 8.

6.2.2 Groundwater

As described in Chapter 3, the City has groundwater wells located in the North Stockton and South Stockton systems, as shown on Figure 3-2. COSMUD uses these wells conjunctively to meet peak summer demands or during dry years when available surface water supplies may be limited. The City has partnered with other users through the Eastern San Joaquin Groundwater Authority (GWA) to manage the groundwater basin.

6.2.2.1 Groundwater Basin Management

The groundwater basin underlying the City is the San Joaquin Valley Basin, Eastern San Joaquin Subbasin (DWR Basin No. 5-22.01), as shown on Figure 6-2. The Subbasin is not adjudicated. The Subbasin is defined by the areal extent of unconsolidated to semi consolidated sedimentary deposits that are bounded by the Mokelumne River on the north and northwest; San Joaquin River on the west; Stanislaus River on the south; and consolidated bedrock on the east.

In 2014, the California legislature enacted the Sustainable Groundwater Management Act (SGMA) in response to continued overdraft of California's groundwater resources. The Subbasin is one of 21 basins and subbasins identified by DWR as being in a state of critical overdraft and is classified by DWR to be a high-priority subbasin. SGMA requires preparation of a groundwater sustainability plan to address measures necessary to attain sustainable conditions in the Subbasin. Sustainability is generally defined as long-term reliability of the groundwater supply and the absence of undesirable results from over pumping.

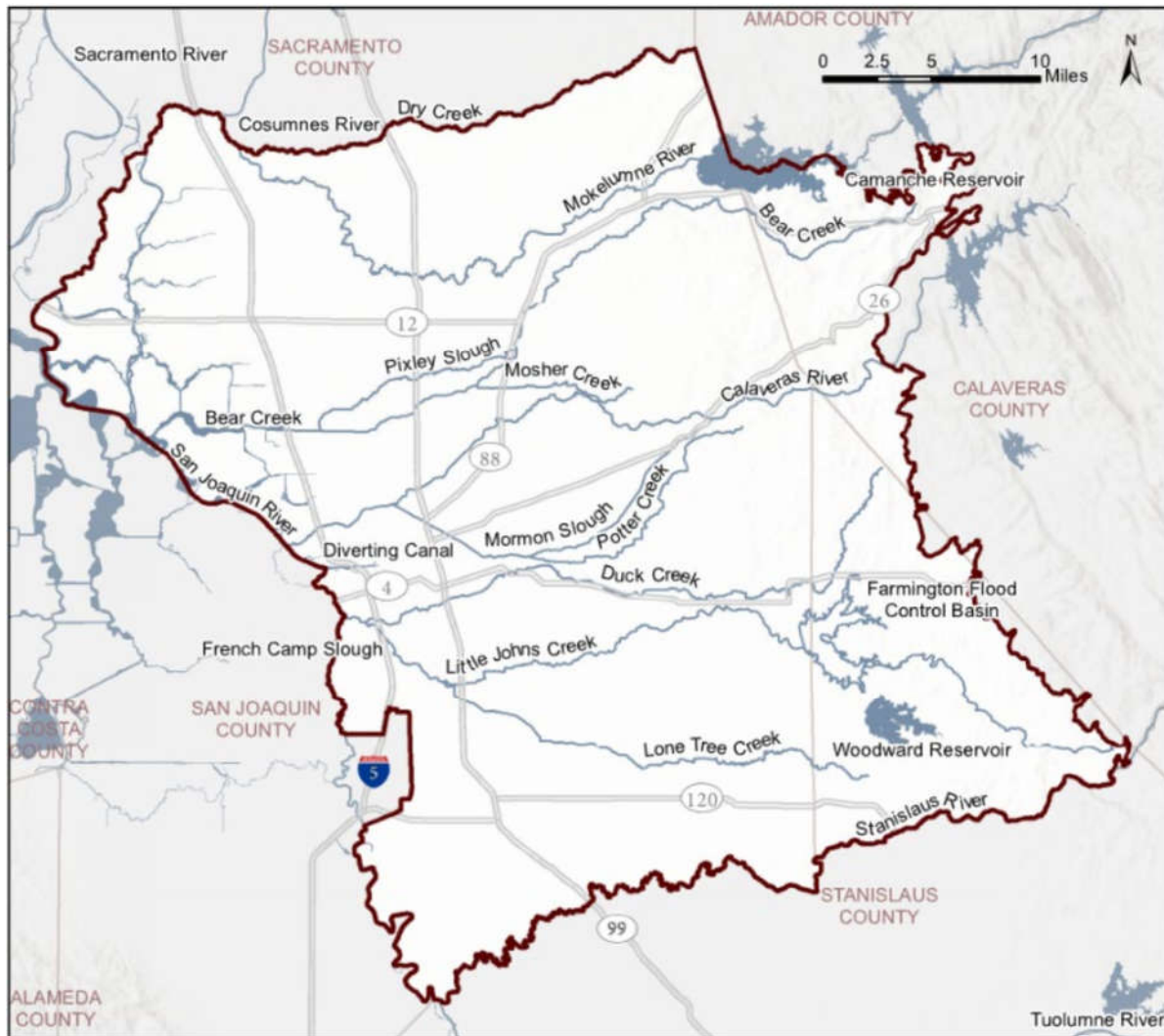


Figure 6-2. Eastern San Joaquin Subbasin

The City has partnered with other users through the GWA to manage the groundwater basin. The City, along with fifteen other groundwater users and groundwater sustainability agencies, formed the GWA in 2017 in response to SGMA. In 2019, GWA completed the Eastern San Joaquin Groundwater Subbasin Groundwater Sustainability Plan (GSP) to achieve groundwater sustainability in the Subbasin by 2040. In general, the GSP shows that groundwater elevations have declined since the 1950's. Water quality issues were detected on the west side of the Subbasin, some of which are from wells underlying the City. The GSP outlined the need to reduce overdraft conditions and identified 23 projects for potential development, along with management actions, that either replace groundwater use or supplement

groundwater supplies to meet current and future water demands. The list of 23 potential projects included in the GSP represent a variety of project types including direct and in-lieu recharge, intra-basin water transfers, demand conservation, water recycling, and stormwater reuse to be undertaken by the member agencies. The GSP determined an estimated pumping offset and/or recharge need of 78,000 AFY Subbasin-wide to achieve sustainability. This amount may be reevaluated after additional data are collected and analyzed.² The GSP is available at <http://www.gbawater.org>.

In the GSP project list, COSMUD may potentially implement advanced metering infrastructure (AMI) to reduce groundwater demand. COSMUD also manages its groundwater demands by implementing demand management measures outlined in Chapter 9 of this UWMP. The demand management measures include: water waste prevention ordinance, metering, conservation pricing, public education and outreach, programs to assess and manage distribution system real loss, water conservation program coordination and staffing support, water survey programs for residential customers, residential plumbing retrofit, conservation programs for commercial, industrial, and institutional accounts; and landscape conservation programs and incentives.

From 2020 to 2040, members of the GWA, including the City, will be monitoring and reporting their progress on implementing project and studies and the impacts of their outreach. Evaluation will be conducted every five years.

COSMUD may also manage its groundwater demands by implementing additional conjunctive use projects outlined under the Stockton Delta Water Supply Project Program Environmental Impact Report (April 2005) which include aquifer storage and recovery, other conjunctive use projects outlined within the current Integrated Regional Water Management Plan – 2020 Addendum, and/or collaborative efforts with other Groundwater Sustainability Agencies.

The City has determined that the sustainable groundwater yield is 0.75 AFY/acre, equivalent to a groundwater yield of approximately 50,000 AFY. To establish the projected groundwater supply that is reasonably available, COSMUD assumes that the reasonably available groundwater for the current water service area (approximately 38,500 acres) is pumped at 0.6 AFY/acre, equivalent to an annual groundwater supply of 23,100 AFY.

6.2.2.2 COSMUD Groundwater Use – Past Five Years

COSMUD uses groundwater conjunctively with its surface water supply sources, with groundwater generally used to meet increased water demands primarily in the summer months or during dry years when available surface water supplies may be limited. Wells are also depended on for emergency supply in the event of surface water supply interruptions. The City's active groundwater supply wells are shown on Figure 6-3.

Historically, the local groundwater basin provided 100 percent of the COSMUD water supply. However, with SEWD surface water deliveries beginning in the 1980s and the completion and dedication of the DWTP and associated water supply infrastructure, COSMUD reliance on groundwater has been significantly reduced. The volume of groundwater pumped by COSMUD over the past five years is summarized in Table 6-3. Groundwater supply provided an average of 4,320 AF, 14 percent of the City's

² Eastern San Joaquin Groundwater Authority, Eastern San Joaquin Groundwater Subbasin Groundwater Sustainability Plan, November 2019, Section 6.

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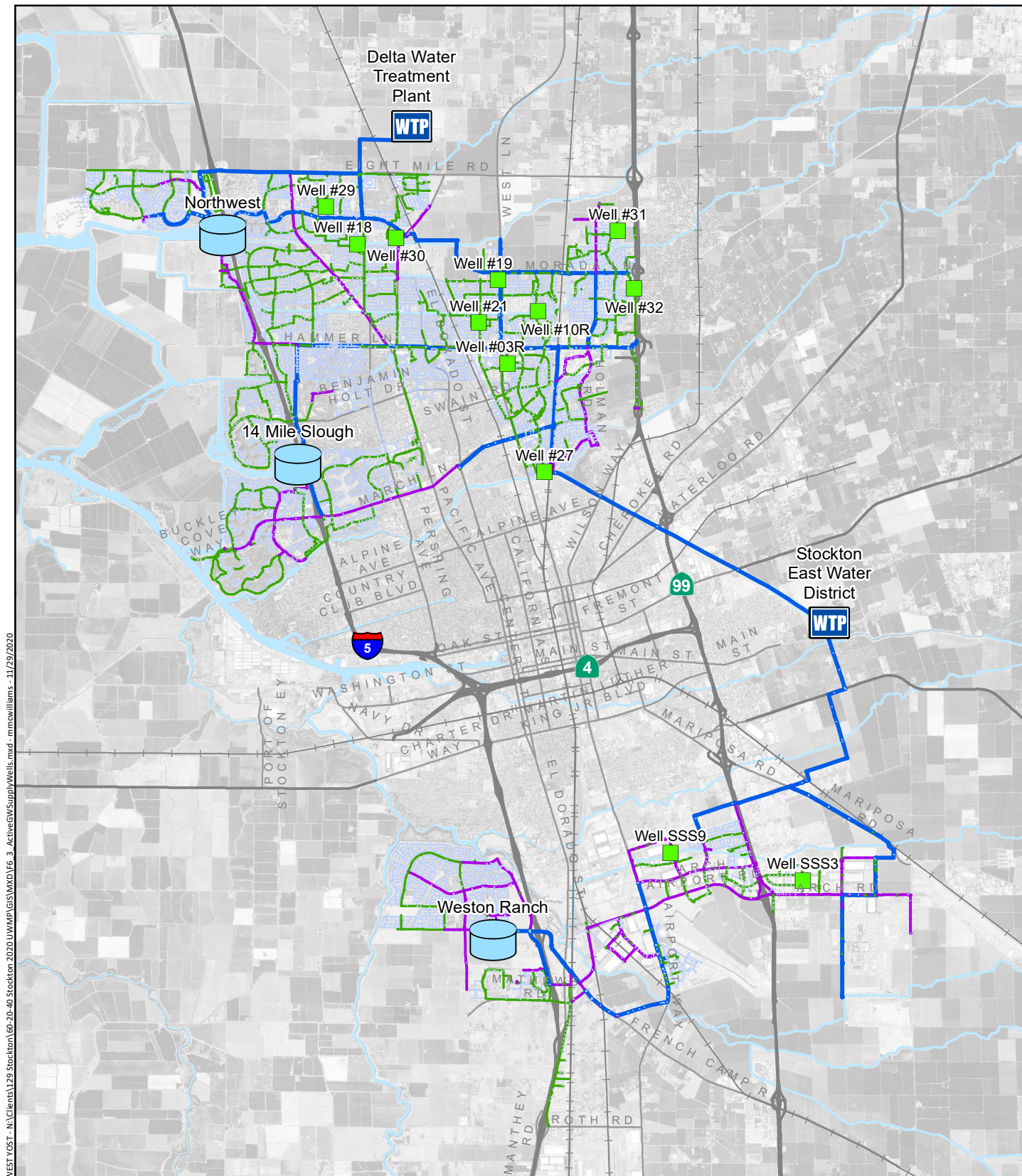
Water Supply Characterization



water supply between 2016 and 2020. In 2020, COSMUD pumped 8,661 AF from the groundwater basin, about 25 percent of the COSMUD total water supply.

Table 6-3. Groundwater Volume Pumped (DWR Table 6-1 Retail)

| | | | | | | |
|--|--|-------|-------|-------|-------|-------|
| <input type="checkbox"/> | Supplier does not pump groundwater. The supplier will not complete the table below. | | | | | |
| <input type="checkbox"/> | All or part of the groundwater described below is desalinated. | | | | | |
| Groundwater Type Drop Down List <i>May use each category multiple times</i> | Location or Basin Name | 2016* | 2017* | 2018* | 2019* | 2020* |
| <i>Add additional rows as needed</i> | | | | | | |
| Alluvial Basin | San Joaquin Valley Basin, Eastern San Joaquin Subbasin | 3748 | 2965 | 3236 | 3778 | 8662 |
| TOTAL | | 3,748 | 2,965 | 3,236 | 3,778 | 8,662 |
| * Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | | | | |
| NOTES: Units are in acre-feet (AF). | | | | | | |



WEST YOST - N:\Clients\129 Stockton\2020 UWMP\GIS\MXD\F6_3_ActiveGWSupplyWells.mxd - mmswilliams - 11/29/2020

Figure 6-3

Active Groundwater Supply Wells

City of Stockton
2020 UWMP



6.2.2.3 Groundwater Use – Projected

In the future, COSMUD plans to use less groundwater in wet and average years. It plans to continue groundwater use to help meet peak demand and in dry years to make up for reductions in surface water deliveries. COSMUD projected normal year supplies from groundwater are provided in Table 6-4 and are based on the estimated amount of groundwater reasonably available for the current water service area (0.6 AFY/acre for approximately 38,500 acres), equivalent to an annual groundwater supply of 23,100 AFY.

The availability of groundwater under single dry, five-year droughts, and any other water year conditions is discussed in Chapter 7.

| Table 6-4. Groundwater Supplies – Projected | | | | | | |
|---|--|--|--------|--------|--------|--------|
| Groundwater Type | Location or Basin Name | Projected Water Supply Volume ^(a) | | | | |
| | | 2025 | 2030 | 2035 | 2040 | 2045 |
| Alluvial Basin | San Joaquin Valley Basin, Eastern San Joaquin Subbasin | 23,100 | 23,100 | 23,100 | 23,100 | 23,100 |
| Notes: Units are in acre-feet (AF). | | | | | | |
| (a) Volumes shown are based on estimated amount of groundwater reasonably available for the current water service area (0.6 AFY/acre for approximately 38,500 acres). | | | | | | |

6.2.3 Surface Water

Water supply from the San Joaquin River is a recent addition to the City's water supply portfolio and currently provides a large portion of the COSMUD existing water supplies. The City diverts water from the San Joaquin River via the IPS at the southwest tip of Empire Tract and treats the water at its DWTP north of Stockton. The location of the DWTP and its associated intake facility is shown on Figure 6-1.

Since the completion of its DWTP in 2012, the San Joaquin River has become a major source of water supply for the City and currently provides up to about 55 percent of its total water supply.³ Water supply from the DWTP is currently used in the COSMUD North Stockton service area, along with local groundwater. Details about this surface water supply are described in this section.

When the City is constrained from diverting water from the San Joaquin River, the City purchases raw water from WID as described above in Section 6.2.1.2.

6.2.3.1 Water Right Permit

The City's 1996 water right application with the State Water Resources Control Board (State Water Board) requested an ultimate diversion of 125,900 AFY to address the City's projected long-term demands through 2050. The State Water Board bifurcated the water right application into two separate applications, Application 30531A and 30531B.

³ Based on 2020 Water Production.

Application 30531A proposed diversions of up to 33,600 AFY from the San Joaquin River and the Place of Use is confined to the City's 1990 General Plan boundary. Through this application, the City was granted a water right permit up to 33,600 AFY from the San Joaquin River under CWC Section 1485. The City's water right permit from the State Water Board was issued on March 8, 2006, under Water Right Permit 21176 (included in Appendix H of this UWMP). Application 30531B, proposed diversions of up to 92,300 AFY, is currently unpermitted. The City plans to continue the application process for this application to help meet the City's future water demands.

Under CWC Section 1485, Water Right Permit 21176 allows the City to divert from the San Joaquin River as much water as the City's wastewater treatment plant discharges into the San Joaquin River under an indirect potable reuse strategy. The quantity is permitted up to 33,600 AFY from the San Joaquin River under Water Right Permit 21176. However, Section 1485 water is subject to pumping restriction in some months due to environmental restrictions.

The City's supply from the San Joaquin River is curtailed annually from February 15th to June 15th due to U.S. Department of Fish and Wildlife Service, California Department of Fish and Wildlife, and National Marine Fisheries Service restrictions. When water diversion is curtailed, COSMUD obtains supplemental water supply from WID as described in Section 6.2.1.2.

If the current pumping restrictions for Water Right Permit 21176 remain in place, the City may need the additional water supply it has applied for under Part B of the City's Water Right (Application 30531B) between 2055-2060. The City estimates that planning and environmental analysis efforts related to Application 30531B would start between 2040 and 2045. The City will continue to evaluate these dates approximately every five years when it prepares future Urban Water Management Plan updates.

6.2.3.2 Delta Water Treatment Plant

Subsequent to the State Water Board water right permit issuance for Application 30531A, COSMUD proceeded with Phase 1 of its Delta Water Supply Project with an initial treatment plant capacity of 30 MGD. The DWTP, IPS, and associated water supply facilities were completed and commenced operation in 2012. Since completion of the DWTP, the City has exercised its water right to divert water through its intake facility on the San Joaquin River.

The COSMUD North Stockton water service area currently receives water from the DWTP and groundwater supplies. In 2020, the City treated 18,804 AF from the San Joaquin River and WID at its DWTP providing 55 percent of the entire COSMUD water demands. DWTP production is expected to be at the treatment capacity to meet existing and projected water demands in the North Stockton water service area, together with groundwater supplies.

As described in Chapter 7, surface water curtailments are possible in dry years and can be offset with additional groundwater use and/or demand reduction through implementation of the City's Water Shortage Contingency Plan as described in Chapter 8.

6.2.3.3 Actual and Projected Surface Water Supplies

The COSMUD actual water supplies from the San Joaquin River in 2020 are provided in Table 6-5. The COSMUD projected normal year water supplies from the San Joaquin River are provided in Table 6-6 in 5-year increments from 2025 to 2045 and are based on the projected water available for diversion under Water Right Permit 21176 with Endangered Species Act pumping restrictions. The availability of this supply source under single dry, five-year droughts, and any other water year conditions is discussed in Chapter 7.

Table 6-5. Surface Water Supplies – Actual

| Surface Water Supply Source | Existing (2020) Water Supply Volume |
|-------------------------------------|-------------------------------------|
| COSMUD – San Joaquin River | 9,970 |
| Notes: Units are in acre-feet (AF). | |

Table 6-6. Surface Water Supplies Projected

| Surface Water Supply Source | Projected Water Supply Volume | | | | |
|-------------------------------------|-------------------------------|--------|--------|--------|--------|
| | 2025 | 2030 | 2035 | 2040 | 2045 |
| COSMUD – San Joaquin River | 23,400 | 24,800 | 25,000 | 25,000 | 25,000 |
| Notes: Units are in acre-feet (AF). | | | | | |

6.2.4 Stormwater

Rainfall in the Central Valley is highly variable and seasonal, with most precipitation occurring between November and May and very little occurring from late spring to fall. Rainfall naturally infiltrates pervious surfaces, replenishing groundwater basins. Stormwater runoff that is not currently infiltrated naturally is captured in minor streams or within the City's storm water system and diverted to local creeks and rivers to the Sacramento-San Joaquin Delta. The City, along with 17 other municipalities and agencies in the Central Valley, is a co-permittee under the Municipal Regional Stormwater NPDES Permit (MRP) that is administered by the Central Valley Regional Water Quality Control Board. The City's active Stormwater Program conforms with the federal Clean Water Act and seeks to eliminate pollutants, such as motor oil, dirt, pesticides, litter, pet waste and other contaminants from entering the storm drain system.

Concurrent with the preparation of this UWMP, the City has prepared a Water Master Plan Update. In the study, the City projected its water demands and reviewed water supply sources. The City also intends to further explore the potential of increased stormwater capture for groundwater recharge. Currently, the City operates two small basins located near Eight Mile Road and Highway 99 (Cannery Park Northeast and Northwest basins), in cooperation with WID, as dual function facilities for stormwater detention and groundwater recharge. Water from WID is supplied to the basins during the summer months. In addition, the City is planning to complete feasibility analysis and preliminary design plans to upgrade the La Morada stormwater detention basin #2 in northeast Stockton into a dual function facility for groundwater recharge using recovered stormwater during the winter and WID supply in the summer months. Information gained from these three sites (totaling approximately 30 acres) will help the City to further evaluate the potential of additional stormwater recovery facilities and their usefulness as a possible water supply source for the City's conjunctive use program in the future.

6.2.5 Wastewater and Recycled Water

COSMUD is responsible for the collection, treatment, and disposal of wastewater for the City, Port of Stockton, and the surrounding urbanized County areas. COSMUD operates the City's RWCF and discharges its tertiary treated wastewater effluent into the San Joaquin River in the central City area. Under Water Right Permit 21176 issued by the State Water Board on March 8, 2006, the City was granted the right to divert water from the San Joaquin River under CWC Section 1485 which allows the City to divert from the

San Joaquin River as much water as the City's wastewater treatment plant discharges into the San Joaquin River up to 33,600 AFY.

Although the RWCF can produce tertiary treated wastewater effluent suitable for unrestricted non-potable reuse, the City does not distribute recycled water specifically to areas within the COSMUD service area, but rather incorporates the use of recycled water resources as part of its indirect potable reuse program.

6.2.5.1 Recycled Water Coordination

COSMUD collects and treats wastewater influent from a significant portion of the Stockton Metropolitan Area, including urbanized areas of San Joaquin County in its vicinity. These areas include:

- COSMUD wastewater service area, which includes the COSMUD water service area and the Cal Water water service area
- Country Club Sanitary Maintenance District
- San Joaquin County Utility Maintenance Division
- Port of Stockton
- Northern California Youth Correctional Center
- California Health Care Facility

Activities associated with water reuse are based on Water Right Permit 21176 issued by the State Water Board on March 8, 2006. Under the permit, the City was granted the right to divert water from the San Joaquin River under CWC Section 1485, which allows the City to take out of the San Joaquin River as much water as the City's wastewater treatment plant discharges into the San Joaquin River. The quantity permitted is not restricted as long as the same amount of wastewater is discharged into the San Joaquin River. As part of the water right permit requirements, daily operational coordination is required between the RWCF and the DWTP IPS diversions in order maximize recycled water use.

6.2.5.2 Wastewater Collection, Treatment, and Disposal

The City provides wastewater services through COSMUD. In this section, the COSMUD collection system, treatment, and disposal services are described.

6.2.5.2.1 Wastewater Collected Within Service Area

The Stockton Metropolitan Area, including urbanized San Joaquin County, is served by a system of gravity sewers, lift stations, and force mains to collect wastewater. The collection system transports wastewater to the RWCF, located on the San Joaquin River in the central part of Stockton.

The COSMUD wastewater collection system consists of approximately 900 miles of sewer main lines. Substantially all of the Stockton Metropolitan area is served by the wastewater collection system, providing service to a population of over 318,522 persons.⁴ In 2020, the City collected 30,915 AF (equal to 10,090 million gallons, or about 27.5 million gallons per day) of wastewater from the COSMUD wastewater service area.

⁴ 2020 data from State of California, Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties and the State, 2011 – 2020 with 2010 Census Benchmark* – Stockton, California, January 2020.

A summary of the wastewater generated in the COSMUD wastewater service area is provided in Table 6-7. The volume of wastewater collected from Cal Water and San Joaquin County water service areas are included in the volume presented in Table 6-7 because flows from those areas are not metered separately.

Table 6-7. Wastewater Collected Within Service Area in 2020 (DWR Table 6-2 Retail)

| <div><input type="checkbox"/></div> There is no wastewater collection system. The supplier will not complete the table below. | | | | | | |
|---|--|--|--|---|--|--|
| Percentage of 2015 service area covered by wastewater collection system <i>(optional)</i> | | | | | | |
| Percentage of 2015 service area population covered by wastewater collection system <i>(optional)</i> | | | | | | |
| Wastewater Collection | | | Recipient of Collected Wastewater | | | |
| Name of Wastewater Collection Agency | Wastewater Volume Metered or Estimated? <i>Drop Down List</i> | Volume of Wastewater Collected from UWMP Service Area 2020 * | Name of Wastewater Treatment Agency Receiving Collected Wastewater | Treatment Plant Name | Is WWTP Located Within UWMP Area? <i>Drop Down List</i> | Is WWTP Operation Contracted to a Third Party? <i>(optional)</i> <i>Drop Down List</i> |
| COSMUD | Metered | 30,915 | City of Stockton | Stockton Regional Wastewater Control Facility | Yes | No |
| Total Wastewater Collected from Service Area in 2020: | | 30,915 | | | | |
| * Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3 . | | | | | | |
| NOTES: Units are in acre-feet (AF). The wastewater volume collected includes wastewater collected from the COSMUD, Cal Water, and San Joaquin County water service areas. | | | | | | |

6.2.5.2.2 Wastewater Treatment and Discharge Within Service Area

The City owns and operates, through COSMUD, its RWCF, which treats wastewater from the Stockton Metropolitan area and urbanized areas of San Joaquin County in the vicinity. The RWCF, located in the central area of the City, off the San Joaquin River and Highway 4, includes conventional secondary treatment facilities, as well as tertiary water treatment facilities. The RWCF consists of the main treatment plant, which has a designed average dry weather flow (ADWF) of 48 MGD, and the tertiary treatment plant, which has a designed ADWF of 55 MGD. The tertiary treatment plant includes approximately 630 acres of facultative oxidation ponds surrounded by distribution canals and groundwater interceptor ditches; an engineered wetland; disinfection facilities; and a river outfall discharge system. Treated wastewater effluent is discharged in the adjacent San Joaquin River.

In 2016, the City entered into a progressive design-build contract to design and construct comprehensive preliminary, primary, secondary, and tertiary treatment system improvements at the RWCF. The initial engineering design for the project was completed in 2018 and resulted in a revised approach to achieving infrastructure rehabilitation and regulatory compliance at the RWCF. Detailed design and construction of the improvements began in 2019 and is expected to be completed in 2023. A portion of the work will add treatment facilities to remove nitrogen from the effluent in order to meet a 2024 regulatory deadline. The

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project will modernize a substantial portion of the RWCF, thus reducing operating and maintenance costs associated with the existing facilities that are reaching the end of their useful life.

In Table 6-8, wastewater treated and discharged in 2020 within the COSMUD water service area is provided. The COSMUD wastewater service area is larger than its water service area, as it includes Cal Water and San Joaquin County water service areas. This volume includes wastewater effluent from those water service areas.

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Table 6-8. Wastewater Treatment and Discharge Within Service Area in 2020 (DWR Table 6-3 Retail)

| <input type="checkbox"/> | No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below. | | | | | | | | | | |
|---|---|--------------------------------|---|-----------------------------------|---|--------------------------------|--------------------|-------------------------------|--------------------------------|----------------------------------|----------------------------------|
| Wastewater Treatment Plant Name | Discharge Location Name or Identifier | Discharge Location Description | Wastewater Discharge ID Number (optional) 2 | Method of Disposal 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 3 | Recycled Outside of Service Area | Instream Flow Permit Requirement |
| Stockton Regional Wastewater Control Facility | Delta | San Joaquin River | | River or creek outfall | Yes | Tertiary | 26,111 | 26,111 | 0 | 0 | 0 |
| Total | | | | | | | 26,111 | 26,111 | 0 | 0 | 0 |
| 1Units 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: Units are in acre-feet (AF). Wastewater volume treated and discharge estimate is from the California Integrated Water Quality System Project (CIWQS) Stockton Regional WW Control Facility 2020 Effluent. Difference in quantity in wastewater received and discharged is due to evaporation at facultative pond treatment step. | | | | | | | | | | | |

6.2.5.3 Recycled Water Description

Recycled water is water recovered from wastewater that is treated such that it is suitable for direct beneficial use or controlled use that would not otherwise occur. For the purposes of this UWMP, recycled water means treated effluent from the RWCF that may be applied for beneficial use. The City does not currently have a recycled water system (purple pipe) to distribute recycled water for reasons discussed further in the next section.

6.2.5.4 Potential, Current, and Projected Recycled Water Uses

The City had considered water recycling in the past. In 1996, it studied the potential for recycled water use in the region. High costs, lack of public interest, and customer concerns prohibited the development of a direct recycled water use program in the City.

6.2.5.4.1 Study on Potential for Recycled Water

In 1996, Carollo Engineers conducted a study for the City to evaluate the market for recycled water within the region. The 1996 Recycled Water Evaluation identified three potential recycled water use options. These options include distributing recycled water to the local community for non-potable reuse, selling recycled water to the CSJWCD, and conducting groundwater recharge in the Linden area.

The City held focus group meetings for the three alternatives. The meetings included individuals with knowledge on water issues in the Stockton area, individuals with expertise in recycled water, farmers, community members, and customers from the Linden area. The three alternatives considered are as follows:

- **Recycled Water Distribution within Stockton.** Distribution pipelines would be required throughout the City to convey the recycled water to its customers. Storage facilities with approximately 43 AF of capacity would be required. The cost for distributing recycled water to the community was estimated to be approximately \$135 million. Because non-potable demand is seasonal, recycled water would not be used throughout the year. Recycled water would need to be diverted or stored to maximize its use.
- **Recycled Water Sales to CSJWCD.** Selling recycled water to Central San Joaquin Water Conservation District (CSJWCD) would require a pipeline to Woodward Reservoir, approximately 30 miles from Stockton, and 33,200 AF of storage capacity. The cost for providing recycled water to CSJWCD was estimated to be approximately \$60 million. At the time, farmers in the region had minimal interest in paying for recycled water because they have a reliable water supply at relatively lower cost.
- **Groundwater Recharge in Linden.** Groundwater recharge in the Linden area would require a pipeline to Linden. No storage would be necessary. The cost for groundwater recharge was estimated to be approximately \$86 million to \$117 million. The range in cost is based on the rate of percolation, which has been found to vary from about 1 to 11 feet per day in previous studies.

Potential recycled water customers in the region expressed concerns about the potential use of recycled water. Concerns include the long-term impacts of recycled water to groundwater and surface water, negative impacts on crops and soils, and reduced marketability of crops irrigated with recycled water.

6.2.5.4.2 Assure Water Supply from the Delta

Because the City's CWC Section 1485 Water Right allows it to divert from the San Joaquin River as much water as the City's wastewater treatment plant discharges into the San Joaquin River up to 33,600 AFY, the City must maximize its recycled wastewater discharge to assure water supply under the indirect potable reuse program. Direct recycling of the RWCF effluent would reduce discharge into the San Joaquin River, thereby limiting the water supply intake for the program. For this reason, the City will unlikely develop a non-potable recycled water or purple pipe system.

Thus, as shown in Table 6-9, Table 6-10 and Table 6-11, the City does not currently use recycled water for a non-potable recycled water system within its service area, nor does it anticipate providing recycled water services in the future. This resource has been directed for use in the City's indirect potable reuse program. Future recycled water supply from the RWCF will be allocated to the program to minimize limitations to its water diversion from the San Joaquin River.

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Table 6-9. Recycled Water Direct Beneficial Uses Within Service Area (DWR Table 6-4 Retail)

| <input checked="" type="checkbox"/> | Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below. | | | | | | | | | | |
|---|---|--|--|--|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------------|----------------------------|
| Name of Supplier Producing (Treating) the Recycled Water: | | | | | | | | | | | |
| Name of Supplier Operating the Recycled Water Distribution System: | | | | | | | | | | | |
| Supplemental Water Added in 2020 (volume) <i>Include units</i> | | | | | | | | | | | |
| Source of 2020 Supplemental Water | | | | | | | | | | | |
| Beneficial Use Type <i>Insert additional rows if needed.</i> | Potential Beneficial Uses of Recycled Water (Describe) | Amount of Potential Uses of Recycled Water (Quantity) <i>Include volume units¹</i> | General Description of 2020 Uses | Level of Treatment <i>Drop down list</i> | 2020 ¹ | 2025 ¹ | 2030 ¹ | 2035 ¹ | 2040 ¹ | 2045 ¹ (opt) | |
| Agricultural irrigation | - | - | - | - | - | - | - | - | - | - | |
| Landscape irrigation (exc golf courses) | - | - | - | - | - | - | - | - | - | - | |
| Golf course irrigation | - | - | - | - | - | - | - | - | - | - | |
| Commercial use | - | - | - | - | - | - | - | - | - | - | |
| Industrial use | - | - | - | - | - | - | - | - | - | - | |
| Geothermal and other energy production | - | - | - | - | - | - | - | - | - | - | |
| Seawater intrusion barrier | - | - | - | - | - | - | - | - | - | - | |
| Recreational impoundment | - | - | - | - | - | - | - | - | - | - | |
| Wetlands or wildlife habitat | - | - | - | - | - | - | - | - | - | - | |
| Groundwater recharge (IPR) | - | - | - | - | - | - | - | - | - | - | |
| Reservoir water augmentation (IPR) | - | - | - | - | - | - | - | - | - | - | |
| Direct potable reuse | - | - | - | - | - | - | - | - | - | - | |
| Other (Description Required) | - | - | - | - | - | - | - | - | - | - | |
| | | | | Total: | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | | | | | | | | | | 2020 Internal Reuse |
| ¹ Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | | | | | | | | | |
| NOTES: The City does not plan to use recycled water for beneficial use within its service area. | | | | | | | | | | | |

**Table 6-10. 2015 UWMP Recycled Water Use Projection
Compared to 2020 Actual (DWR Table 6-5 Retail)**

| <input checked="" type="checkbox"/> | Recycled water was not used in 2015 nor projected for use in 2020. The supplier will not complete the table below. If recycled water was not used in 2020, and was not predicted to be in 2015, then check the box and do not complete the table. | |
|--|--|------------------------------|
| Beneficial Use Type | 2015 Projection for 2020 ¹ | 2020 Actual Use ¹ |
| <i>Insert additional rows as needed.</i> | | |
| Agricultural irrigation | - | - |
| Landscape irrigation (exc golf courses) | - | - |
| 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) | - | - |
| Total | 0 | 0 |
| ¹ Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | |
| NOTE: The City does not plan to use recycled water for beneficial use within its service area. | | |

Table 6-11. Methods to Expand Future Recycled Water Use (DWR Table 6-6 Retail)

| <input checked="" type="checkbox"/> | Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation. | | |
|--|---|-----------------------------|---|
| | Provide page location of narrative in UWMP | | |
| Name of Action | Description | Planned Implementation Year | Expected Increase in Recycled Water Use * |
| <i>Add additional rows as needed</i> | | | |
| Total | | | 0 |
| *Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | |
| NOTES: The City does not plan to use recycled water for beneficial use within its service area. | | | |

6.3 DESALINATED WATER OPPORTUNITIES

Desalination is the process of removing dissolved minerals from brackish or saltwater to produce freshwater that can be used for municipal needs such as drinking water and industrial uses. It is one of several elements that may be included in a community's water supply portfolio.

The City currently has no need or readily available sources of ocean water, brackish water, or saline groundwater that could provide viable opportunities for development of desalinated water as a long-term supply. Thus, the City has not included desalinated water in planning for its future water supply sources.

6.4 EXCHANGES OR TRANSFERS

Water exchanges or transfers between willing sellers and willing buyers supplement water supplies in dry times and move water to places of critical need. The City is not planning to pursue additional water resource exchanges or transfers during this UWMP planning period and will continue to rely on available conjunctive use opportunities.

6.5 FUTURE WATER PROJECTS

As described in Chapter 4, the COSMUD water demands are projected to increase from the current (2020) 34,404 AFY to approximately 48,444 AFY by 2045. To reliably meet water demands, COSMUD plans to implement the projects discussed in this section as they are needed to help optimize the use of the water supplies available to the COSMUD.

The City's future water supply programs are summarized in Table 6-12 and described in further detail below.

Table 6-12. Expected Future Water Supply Projects or Programs (DWR Table 6-7 Retail)

| <input type="checkbox"/> | No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below. | | | | | |
|---|---|------------------------------|--|-----------------------------|---|--|
| <input type="checkbox"/> | Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format. | | | | | |
| 6-20 | Provide page location of narrative in the UWMP | | | | | |
| Name of Future Projects or Programs | Joint Project with other suppliers? | | Description (if needed) | Planned Implementation Year | Planned for Use in Year Type <i>Drop Down List</i> | Expected Increase in Water Supply to Supplier* <i>This may be a range</i> |
| | <i>Drop Down List (y/n)</i> | <i>If Yes, Supplier Name</i> | | | | |
| <i>Add additional rows as needed</i> | | | | | | |
| North Stockton Pipeline Hypochlorite Facility Project ^(a) | Yes | SEWD | Construct new sodium hypochlorite injection system to combine supply from the DWTP and SEWD | 2021 | All Year Types | - |
| Increase WID Supply ^(b) | Yes | WID | Per contract, WID would supply the City with an additional 3.0 AFY per acre the City annexed | 2030 | All Year Types | 6,500 AFY |
| Advanced Metering Infrastructure ^(c) | No | - | Provide greater efficiency and reduce costs for meter reading and allow customers to better track and manage their water use | 2025 - 2028 | All Year Types | - |
| *Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | | | | |
| <p>NOTES: Units are in acre-feet (AF).</p> <p>(a) The project will increase supply reliability by allowing North Stockton to be supplied by the DWTP and SEWD without formation of undesirable disinfection byproducts due to different potable water treatment processes.</p> <p>(b) WID supply may increase by an additional 6,500 AFY as agricultural lands north of the City are annexed to the City.</p> <p>(c) AMI will provide customers with the ability to access and better manage their water use.</p> | | | | | | |

6.5.1 North Stockton Pipeline Hypochlorite Facility Project

Shortly after commencing chloramination disinfection in the North Stockton system, COSMUD isolated the North Stockton water system from the SEWD. The DWTP and SEWD DJWWTP implement different disinfection processes, with the SEWD DJWWTP using free chlorine and the DWTP using chloramine disinfection. Combining the two water supplies can lead to the formation of disinfection byproducts that result in undesirable aesthetics (taste and odor) and in reduced residual chlorine, which affects the safety of the drinking water due to the potential for microbial activity.

COSMUD has completed the planning and design and is in the process of implementing the North Stockton Pipeline Hypochlorite Facility Project that would allow SEWD water supply to be conveyed to the North Stockton system and combined with DWTP water supply. At the time of preparation of this 2020 UWMP, the project is under construction. The project includes the installation of a new sodium hypochlorite system to boost the available chlorine level to enable the chloramination process at the existing North Stockton Pipeline Ammonia Facility. The North Stockton Pipeline Hypochlorite Facility will reduce the potential for formation of disinfection byproducts and maintain the chlorine residual at acceptable levels in the combined potable water.

6.5.2 Increase in Woodbridge Irrigation District Supply

The City's 2008 contract with WID includes a provision for increase in water supply as WID-served agricultural lands in the northern part of the City are annexed to the City for municipal and industrial use. Under this contract, an additional 6,500 AFY of WID supply will become available to COSMUD at a rate of 3.0 AFY per acre annexed. WID supply may potentially increase from 6,500 AFY to 13,000 AFY by 2030.⁵

6.5.3 Advanced Metering Infrastructure

In the 2019 GSP that was prepared by GWA, 23 potential projects were identified to either replace groundwater use or supplement groundwater supplies to meet current and future water demands. Potential projects are in the planning stages and may move forward if funding becomes available.

COSMUD may potentially implement an AMI project, provided funding availability. COSMUD provides water service through approximately 49,000 water meters, of which a portion are read via a touch-read system and the remainder are read manually every month. Manual meter reading is costly and is the least efficient method of meter reading.

AMI can provide greater efficiency and reduce cost for COSMUD. It also provides several other benefits, including improved customer service, leak detection, and real-time consumption information to the customer. Documented customer water savings and improved demand-side water conservation has occurred when real-time consumption information is available. COSMUD may potentially reduce groundwater demand by 2,000 AFY.⁶

COSMUD completed the initial study for the project in 2011. Implementation of the project is planned, but timing will depend on funding availability.

⁵City of Stockton 2015 UWMP, Section 4.

⁶Eastern San Joaquin Groundwater Authority, Eastern San Joaquin Groundwater Subbasin Groundwater Sustainability Plan, November 2019, Table 6-1.

6.5.4 Water Supply Reliability Projects

Concurrent with the preparation of this UWMP, the City prepared a Water Master Plan Update to identify projects that improve the reliability of its existing water supplies. Although these projects do not provide additional water supplies, they enhance reliability of the City's water supplies. The Water Master Plan Update recommended the following projects, which have been included in the City's budget for implementation:

- **Groundwater Study:** A comprehensive groundwater supply study was recommended to investigate existing facility conditions, capacity, and water quality/regulatory trends. The outcome of the study would identify recommendations for rehabilitation of wells in North Stockton and South Stockton, including identifying appropriate wellhead treatment (at each location or centralized at a reservoir site).
- **Groundwater Storage Bank Study:** A groundwater storage bank/recharge basins study was recommended to address future supply reliability by expanding/augmenting its conjunctive use portfolio, allowing for the flexibility of banking unused available surface water supply in the groundwater basin for use at a later time.

Because these projects do not increase the City's available water supplies, they are not included in Table 6-12.

6.6 SUMMARY OF EXISTING AND PLANNED SOURCES OF WATER

The City's existing water supplies and future projected normal year water supplies are summarized in Table 6-13 and Table 6-14, respectively.

Table 6-13. Water Supplies – Actual (DWR Table 6-8 Retail)

| Water Supply | Additional Detail on Water Supply | 2020 | | |
|---|-----------------------------------|----------------|------------------------------|---------------------------------------|
| Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool | | Actual Volume* | Water Quality Drop Down List | Total Right or Safe Yield* (optional) |
| Add additional rows as needed | | | | |
| Purchased or Imported Water | SEWD | 6,939 | Drinking Water | |
| Purchased or Imported Water | WID | 8,657 | Drinking Water | |
| Surface water (not desalinated) | San Joaquin River Diversion | 9,970 | Drinking Water | |
| Groundwater (not desalinated) | City-owned wells | 8,662 | Drinking Water | |
| Total | | 34,228 | | 0 |
| *Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | | |
| NOTES: Units are in acre-feet (AF). | | | | |

Chapter 6

Water Supply Characterization



The City's future projected normal year water supplies are summarized in Table 6-14. Key assumptions for each supply source are summarized as follows:

- The projected SEWD supply for the COSMUD was determined in coordination with SEWD and Cal Water. West Yost reviewed SEWD's Schedule D forms for 2012 through 2018 fiscal years. The Schedule D forms outline the total water deliveries from SEWD to the Urban Contractors per fiscal year. Historically, COSMUD has received approximately one-third of the total SEWD water supply to the Urban Contractors. The project available supply from SEWD to COSMUD is estimated to be one-third of the SEWD's projected water supply deliveries for Cal Water and COSMUD.
- The projected WID supply is based on an existing supply of 6,500 AFY and a contractual supply increase of 6,500 AFY to 13,000 AFY by 2030 as agricultural lands in the northern part of the City are annexed to the City for municipal and industrial use.
- The projected San Joaquin River supply available is based on the anticipated San Joaquin River water available for diversion with Endangered Species Act pumping restrictions as summarized in the City's Water Right Permit 21176 Petition for Extension of Time (Appendix H).
- The projected groundwater supply of 23,100 AFY is based on the estimated amount of groundwater reasonably available in the COSMUD water service area (approximately 38,500 acres) at a pumpage of 0.6 AFY/acre.

Table 6-14. 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 May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool | | Reasonably Available Volume | Total Right or Safe Yield (optional) | Reasonably Available Volume | Total Right or Safe Yield (optional) | Reasonably Available Volume | Total Right or Safe Yield (optional) | Reasonably Available Volume | Total Right or Safe Yield (optional) | Reasonably Available Volume | Total Right or Safe Yield (optional) |
| Add additional rows as needed | | | | | | | | | | | |
| Purchased or Imported Water | SEWD | 24,300 | | 24,300 | | 24,300 | | 24,300 | | 24,300 | |
| Purchased or Imported Water | WID | 6,500 | | 13,000 | | 13,000 | | 13,000 | | 13,000 | |
| Surface water (not desalinated) | San Joaquin River Diversion | 23,400 | | 24,800 | | 25,000 | | 25,000 | | 25,000 | |
| Groundwater (not desalinated) | City-owned wells | 23,100 | | 23,100 | | 23,100 | | 23,100 | | 23,100 | |
| Total | | 77,300 | | 85,200 | | 85,400 | | 85,400 | | 85,400 | |
| *Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | | | | | | | | | |
| NOTES: Units are in acre-feet. 1. The Second Amended Wholesale Water Supply Contract (2nd Amended Contract) between SEWD and the City of Stockton, Cal Water and San Joaquin County (Urban Contractors) is due to expire on April 1, 2035. The projected reasonably available water supply totals listed in Table 6-14 (DWR Table 6-9 Retail) after the contract expiration date are based on terms specified under the 2nd Amended Contract, Section 3. Renewal: Continued Service where each Contractor shall be entitled to continued service, if desired by a Contractor(s), and to extend or renew the terms and conditions of the Contract. Specific terms and conditions for this continued service would be based on agreement between SEWD and the Contractor(s). 2. Because of the uncertainty of the impacts of the Bay-Delta Water Quality Control Plan Amendment, projected SEWD supplies are assumed to remain at the current reasonably available volume. | | | | | | | | | | | |

6.6.1 Delta Water Rights and DWTP

The City planned for an ultimate diversion of 125,900 AFY from the San Joaquin River by 2050 and applied for Delta water rights in 1996. In 2006, State Water Board issued Permit 21176 for 33,600 AFY. The City's application for additional water right, Application 30531B for up to 92,300 AFY, is currently unpermitted. The City plans to pursue this application in the future to meet the COSMUD ultimate water demand. Pursuant to the grant of additional water right by the State Water Board, the DWTP is planned for expansion as needed, up to 160 MGD.

The City is investigating the following projects to maximize its Water Right Permit 21176 in the future, beyond the planning horizon of this UWMP.

6.6.1.1 Increasing DWTP Treatment Capacity

As discussed in Section 6.2.5, Water Right Permit 21176 allows the City to divert from the San Joaquin River as much water as its RWCF discharges into the San Joaquin River under CWC Section 1485. The ability to fully capture RWCF discharges for potable water treatment could be enhanced through an increase in the DWTP's treatment capacity from 30 MGD to 40 MGD. This increase in capacity may be accomplished through operational changes that would increase the volume of water passing through the plant's membrane filters to more fully utilize their rated capacity and additional membrane units may be added to the treatment train to further accommodate the increased capacity and operational flexibility. This project is beyond the planning horizon of this UWMP and therefore not included in Table 6-12.

6.6.1.2 DWTP Phase II - Recharge Basin Improvements Project

The City is evaluating the potential of a groundwater banking project at the DWTP site to optimize use of Permit 21176. A groundwater banking project would allow the City to divert water under Permit 21176 when potable water demand is low and bank the water for later use when potable water demand is high, or when the diversion restrictions are in place due to environmental restrictions. This project would meet the City's water supply and drought protection goals and provide benefits to the Eastern San Joaquin Groundwater Subbasin.

Initial groundwater infiltration testing was conducted at the potential recharge pond site in 2008. With an assumed infiltration pond size of 70 acres and a wetted period of 228 days an estimated 12,768 AF could potentially be stored to the groundwater basin. A more detailed technical analysis of the timing and quantity of water supply is planned.

To complete the Recharge Basin Improvements Project, the City plans to complete additional engineering feasibility and environmental studies, which will demonstrate the validity of the groundwater banking project and allow for the permitting and construction of the project to move forward. For this project, the City will need to file, and the State Water Board will need to issue, an Underground Storage Supplement for Permit 21176 for the City to be able to divert and store water underground for later withdrawal and application to beneficial use.

This project is beyond the planning horizon of this UWMP and therefore not included in Table 6-12.

6.7 SPECIAL CONDITIONS

The City's water supply availability may be affected by climate change impacts and regulatory actions. Because purchased water and water produced at the DWTP are substantially from surface water sources, these supplies are vulnerable to climate change. Regulatory impacts associated with environmental restrictions already limit the City's surface water supply during peak demand periods.

6.7.1.1 Climate Change Impacts

The California Energy Commission conducted California's Fourth Climate Change Assessment which is made up of more than fifty statewide, regional, and technical reports. A regional report for the San Joaquin Valley summarizes recent climate research for the region in which the City is located. Water resources in the region are expected to be adversely impacted by climate change. Regional climate trend shows increase variability in precipitation, with prolonged drought periods and pronounced precipitation events.⁷

As described above, the surface water will continue to be a significant source of the City's water supplies. The following provides a summary of the potential impacts of climate change to water supply operations in the Delta and other surface water supplies, 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 more need for flood control storage, and making it more difficult to refill reservoir flood control space during late spring or early summer and potentially reducing the amount 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 saltwater 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 by increased sediment load or increased contaminants from increased urban and agricultural runoff.
 - Sea level rise could push saltwater 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 saltwater 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 amount of saltwater intrusion which occurs.

⁷ Westerling, Leroy, Josue Medellin-Azuara, Joshua Viers. (University of California, Merced). 2018. San Joaquin Valley Summary Report. California's Fourth Climate Change Assessment. Publication number: SUMCCA4-2018-003.

- 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 other operations for COSMUD. Specifically, with respect to groundwater management and stormwater management. Additional groundwater pumping may be necessary in prolonged dry seasons if surface water supplies are limited. Flood control operations in general may be impacted by more intense and more frequent flooding events.

The City's 2014 CAP identified sectors with the highest GHG emissions and provided a roadmap to implement select emissions reduction measures to help slow climate change. GHG emissions from water treatment are a small portion of the overall emissions from the City. However, to reduce GHG emissions and assure reliable water supply, the CAP proposes water conservation as one of the potential reduction measures. The City's water conservation program and the demand management measures (DMM) it has implemented are described in Chapter 9. Planned DMMs to achieve long-term water conservation objectives are also discussed in Chapter 9.

6.7.1.2 Regulatory Conditions

Current and emerging regulatory conditions affect the City's water supply availability. Current regulatory conditions to protect environmentally sensitive species in the Delta limit the City's ability to divert water from the San Joaquin River. As discussed in Section 6.2.3.1, the City is already curtailed from diverting water from the San Joaquin River annually from February to June.

Emerging regulatory conditions associated with groundwater sustainability and water quality may also limit the City's water supply from the already critically over-drafted groundwater basin.

Increased curtailment of these water supply sources may require the City to seek water exchanges, or install surface water diversion points and groundwater wells at alternative locations.

6.8 ENERGY INTENSITY

In accordance with CWC §10631.2(a), the energy intensity to provide water service to COSMUD 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 SEWD requires to transport and deliver treated water, and WID requires to deliver raw water to COSMUD is excluded from this plan.

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

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

In Table 6-15 below, the energy intensity of COSMUD water service is calculated for 2019 as it provides a typical year's energy use. The COVID-19 pandemic in 2020 may have altered COSMUD customers' water use as shelter-in-place and restrictions on businesses went into effect. The total energy intensity for the COSMUD water service is 330 kWh/AF.

Table 6-15. Energy Intensity – Total Utility Approach (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? | <input type="checkbox"/> | Sum of All Water Management Processes | Non-Consequential Hydropower | |
| <i>Water Volume Units Used</i> | AF | Total Utility | Hydropower | Net Utility |
| <i>Volume of Water Entering Process (volume unit)</i> | | 34,228 | 0 | 34,228 |
| <i>Energy Consumed (kWh)</i> | | 11,280,428 | 0 | 11,280,428 |
| <i>Energy Intensity (kWh/volume)</i> | | 329.6 | 0.0 | 329.6 |
| Quantity of Self-Generated Renewable Energy | | | | |
| | | 117,926 kWh | | |
| Data Quality (<i>Estimate, Metered Data, Combination of Estimates and Metered Data</i>) | | | | |
| Metered Data | | | | |
| Data Quality Narrative: | | | | |
| Monthly electrical energy data was provided for groundwater wells, reservoir pump stations, and water treatment at the DWTP. | | | | |
| Narrative: | | | | |
| The COSMUD water service area is supplied by surface water from the San Joaquin River, purchased water from SEWD and WID, and groundwater from City-owned wells. Refer to Section 6.2 for an in-depth explanation of each water supply source. The energy data provided summarized the monthly energy consumption for operating the DWTP, groundwater wells, and reservoir usage. Some solar power is produced at the DWTP. | | | | |

As discussed in Section 6.2.5, the City provides wastewater collection, treatment, and disposal services to the Stockton Metropolitan area, including areas outside of the COSMUD water service area. The City owns and COSMUD operates the wastewater collection, treatment, and disposal system. The City's water right permit allows the City to divert from the San Joaquin River as much water as the City's wastewater treatment plant discharges into the San Joaquin River; thus, wastewater disposal presents an integral part in assuring the City's water supply availability. The energy intensity associated with the City's wastewater services for 2019 is provided in Table 6-16. The total energy intensity for the City's wastewater services is 1,132 kWh/AF.

Chapter 6

Water Supply Characterization



Table 6-16. Energy Intensity – Wastewater & Recycled Water (DWR Table O-2)

| | | | | | |
|--|--------------------------|-------------------------|------------|--|------------|
| Enter Start Date for Reporting Period | | 1/1/2019 | | Urban Water Supplier Operational Control | |
| End Date | | 12/31/2019 | | | |
| | | | | Water Management Process | |
| Is upstream embedded in the values reported? | <input type="checkbox"/> | Collection / Conveyance | Treatment | Discharge / Distribution | Total |
| Volume of Water Units Used | | AF | | | |
| Volume of Wastewater Entering Process (volume units selected above) | | 30,915 | 26,111 | 26,111 | 26,111 |
| Wastewater Energy Consumed (kWh) | | 0 | 29,559,688 | 0 | 29,559,688 |
| Wastewater Energy Intensity (kWh/volume) | | 0.0 | 1132.1 | 0.0 | 1132.1 |
| Volume of Recycled Water Entering Process (volume units selected above) | | 0 | 0 | 0 | 0 |
| 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 7,064,695 kWh | | | | | |
| Data Quality (Estimate, Metered Data, Combination of Estimates and Metered Data) Metered Data | | | | | |
| Data Quality Narrative: Monthly electrical energy data was provided for wastewater treatment processes at the Regional Wastewater Control Facility (RWCF). | | | | | |
| Narrative: The COSMUD is responsible for the collection, treatment, and disposal of wastewater for the City, Port of Stockton, and surrounding urbanized County areas. COSMUD operates the City's RWCF and discharges tertiary treated wastewater effluent into the San Joaquin River. Electrical usage provided is for the main facility usage and tertiary facility usage. Electrical production is from the cogeneration process at the RWCF. | | | | | |

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CHAPTER 7

Water Service Reliability and Drought Risk Assessment

This chapter discusses the City's water supply reliability under varying conditions through 2045. Factors impacting long-term reliability of water supplies are discussed. In assessing the City's water supply reliability, a comparison of projected water supplies and projected water demand in normal, single dry, and five consecutive dry years is provided for the COSMUD water service area. This chapter also includes the City's Drought Risk Assessment (DRA) for the next five years. Findings show that the City's water supplies are sufficient to meet the existing and projected water demands during normal and dry conditions.

7.1 WATER SERVICE RELIABILITY ASSESSMENT

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

7.1.1 Constraints on Water Sources

The City's water supply consists of surface water from the San Joaquin River, surface water from the Mokelumne River, treated surface water from SEWD, and local groundwater. The City uses its surface water sources and groundwater sources conjunctively.

Factors contributing to constraints on the City's water supplies include legal limitations due to water rights and contracts limiting the quantity of water available to the City, environmental restrictions, regulatory restrictions, and reductions in availability due to climatic factors. The factors and constraints specific to each of the City's individual water supplies are described in Chapter 6 (Section 6.7).

7.1.2 Reliability by Year Type

Water supply reliability is assessed based on the characteristics of the City's water supplies during various water year types which are provided in this section. CWC §10635(a) requires that the City's water service reliability be assessed based on the following three water year types:

1. **Normal Year** – This condition represents the water supplies the City considers available during normal conditions. This could be a single year or averaged range of years in the historical sequence that most closely represents the median or average water supply available. The year 2018 represents a normal year for the City. This year represents the City's typical year where all of its combined water supply sources are available to meet demands.

As discussed in Section 6.2.3, the City's water supplies changed after the startup of the DWTP in 2012. The San Joaquin River has since become a major source of water supply. The Year 2018 presents the COSMUD normal use of this supply, in conjunction with the City's other supply sources, outside of the startup period and the subsequent drought years that commenced in 2014.

2. **Single Dry Year** – This condition represents the year with the lowest water supply availability to the City. The year 2015 represents the Single Dry Year for the City.
3. **Five-Consecutive-Year Drought** – This condition represents a five-consecutive-year drought period such as the lowest average water supply available to the Supplier for five years in a row since 1903. The Years 2013 through 2017 represent the Five-Consecutive-Year Drought years for the City.

Table 7-1 summarizes each year type for the COSMUD water supply portfolio. These years are also known as the “Base Years”, and represent the availability of all of the COSMUD water supplies.

| Table 7-1. Basis of Water Year Data | |
|-------------------------------------|--------------|
| Water Year Type | Base Year(s) |
| Normal Water Year | 2018 |
| Single Dry Water Year | 2015 |
| Five-Consecutive-Year Drought | 2013 - 2017 |

7.1.2.1 SEWD Supply

SEWD is a wholesale water supplier to the COSMUD water service area as described in Section 6.2.1. COSMUD coordinated with SEWD and Cal Water to determine the availability of SEWD water supply during the base years. The availability of SEWD water supply during base years is summarized in Table 7-2.

Review of SEWD’s water deliveries from Fiscal Years 2012 through 2018 fiscal years show that COSMUD received approximately one-third of the total SEWD water supply to the Urban Contractors.¹ SEWD estimated that approximately 72,800 AF will be available to the Urban Contractors. Thus, the normal year volume entered for the COSMUD water service area is estimated to be 24,300 AF, approximately one-third of 72,800 AF.

Per the Second Amended Contract (Appendix G), SEWD is required to deliver a minimum of 20,000 AF to the Urban Contractors. Thus, the water supply availability for the City during the single dry year shown in Table 7-2 reflects approximately one-third of the SEWD contractual minimum volume of 20,000 AF.

The water supply availability provided in Table 7-2 for the five-consecutive-dry years reflects the City’s deliveries from SEWD during the most recent Statewide drought. Available water supplies for the first and fifth years of the five-consecutive-year drought are estimated to be normal year supplies. Available SEWD supplies are reduced in the second year, and then further reduced to minimum deliveries (one-third on the contractual minimum volume) in the third and fourth years. These same SEWD supply assumptions for a five-year drought are made for the drought risk assessment for 2021 through 2025 which is described below in Section 7.3.2.

¹ Stockton East Water District. Fiscal Years 2012 – 2013 to 2018 – 2019. Schedule D.

Table 7-2. Basis of Water Year Data for SEWD Water Supply (DWR Table 7-1 Retail)

| Year Type | Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020 | Available Supplies if Year Type Repeats | |
|--|--|---|---|
| | | <input type="checkbox"/> | Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____ |
| | | <input checked="" type="checkbox"/> | Quantification of available supplies is provided in this table as either volume only, percent only, or both. |
| | | Volume Available * | % of Average Supply |
| Normal Year | 2018 | 24,300 | 100% |
| Single-Dry Year | 2015 | 6,700 | 28% |
| Consecutive Dry Years 1st Year | 2013 | 24,300 | 100% |
| Consecutive Dry Years 2nd Year | 2014 | 15,500 | 64% |
| Consecutive Dry Years 3rd Year | 2015 | 6,700 | 28% |
| Consecutive Dry Years 4th Year | 2016 | 6,700 | 28% |
| Consecutive Dry Years 5th Year | 2017 | 24,300 | 100% |
| Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table. | | | |
| *Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | |
| NOTES: Units are in acre-feet (AF). | | | |

7.1.2.2 San Joaquin River Supply

The City's water right to the San Joaquin River is discussed in Section 6.2.3. Under CWC Section 1485, Water Right Permit 21176 allows the City to divert from the San Joaquin River as much water as the City's wastewater treatment plant discharges into the San Joaquin River. The quantity is permitted up to 33,600 AFY from the San Joaquin River under Water Right Permit 21176. However, Section 1485 water is subject to pumping restriction in some months due to environmental restrictions.

The City's Water Right Permit 21176 Petition for Extension of Time (Appendix H) summarizes San Joaquin River water available for diversion based on the City's wastewater treatment plant discharge and pumping restrictions due to the environmental restrictions for 2012 through 2040. If the current pumping restrictions for Permit 21176 remain in place, the City may need the additional water supply it has applied for under Part B of the City's Water Right (Application 30531B) between 2055-2060. The City estimates that planning and environmental analysis efforts related to Application 30531B would start between 2040 and 2045. The City will continue to evaluate these dates approximately every five years when it prepares future Urban Water Management Plan updates.

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Since the Petition for Extension of Time was completed prior to 2020, the volumes for 2020 through 2040 are projections of the anticipated volume available for diversion from the San Joaquin River. The availability of San Joaquin River water supply during base years is summarized in Table 7-3.

Table 7-3. Basis of Water Year Data for San Joaquin River Water Supply (DWR Table 7-1 Retail)

| Year Type | Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020 | Available Supplies if Year Type Repeats | |
|--------------------------------|--|---|---|
| | | <input type="checkbox"/> | Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____ |
| | | <input checked="" type="checkbox"/> | Quantification of available supplies is provided in this table as either volume only, percent only, or both. |
| | | Volume Available * | % of Average Supply |
| Normal Year | 2018 | 20,500 | 100% |
| Single-Dry Year | 2015 | 19,100 | 93% |
| Consecutive Dry Years 1st Year | 2013 | 18,300 | 89% |
| Consecutive Dry Years 2nd Year | 2014 | 19,000 | 93% |
| Consecutive Dry Years 3rd Year | 2015 | 19,100 | 93% |
| Consecutive Dry Years 4th Year | 2016 | 18,100 | 88% |
| Consecutive Dry Years 5th Year | 2017 | 21,400 | 104% |

Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.

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

NOTES: Units are in acre-feet (AF).
Volume available is based on the City's Water Right Permit 21176 Petition for Extension of Time Table 2.

7.1.2.3 WID Supply

WID provides raw water to the COSMUD as described in Section 6.2.1. The raw water augments supply to the DWTP if the San Joaquin River water is not available due to environmental restrictions. Consistent with the 2015 UWMP, a slight supply reduction from 6,500 AF to 4,500 AF is assumed during a single dry year and the third and fourth years of the five-consecutive-year drought. The availability of WID water supply during base years is summarized in Table 7-4.

Table 7-4. Basis of Water Year Data for WID Water Supply (DWR Table 7-1 Retail)

| Year Type | Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020 | Available Supplies if Year Type Repeats | |
|--|--|---|---|
| | | <input type="checkbox"/> | Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____ |
| | | <input checked="" type="checkbox"/> | Quantification of available supplies is provided in this table as either volume only, percent only, or both. |
| | | Volume Available * | % of Average Supply |
| Normal Year | 2018 | 6,500 | 100% |
| Single-Dry Year | 2015 | 4,500 | 69% |
| Consecutive Dry Years 1st Year | 2013 | 6,500 | 100% |
| Consecutive Dry Years 2nd Year | 2014 | 6,500 | 100% |
| Consecutive Dry Years 3rd Year | 2015 | 4,500 | 69% |
| Consecutive Dry Years 4th Year | 2016 | 4,500 | 69% |
| Consecutive Dry Years 5th Year | 2017 | 6,500 | 100% |
| Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table. | | | |
| *Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | |
| NOTES: Units are in acre-feet (AF). | | | |

7.1.2.4 Groundwater Supply

The City plans to use its groundwater supply conjunctively with the available treated surface water supplies and purchased water supplies. Available groundwater supply is further discussed in Section 6.2.2. Available groundwater supply is based on the projected groundwater supply that is reasonably available. COSMUD assumes that the reasonably available groundwater for the current water service area (approximately 38,500 acres) is pumped at 0.6 ac-ft/acre/year, equivalent to an annual groundwater supply of 23,100 ac-ft/year. The availability of groundwater supply during base years is summarized in Table 7-5.

Table 7-5. Basis of Water Year Data for Groundwater Supply (DWR Table 7-1 Retail)

| Year Type | Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020 | Available Supplies if Year Type Repeats | |
|--|--|---|---|
| | | <input type="checkbox"/> | Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____ |
| | | <input checked="" type="checkbox"/> | Quantification of available supplies is provided in this table as either volume only, percent only, or both. |
| | | Volume Available * | % of Average Supply |
| Normal Year | 2018 | 23,100 | 100% |
| Single-Dry Year | 2015 | 23,100 | 100% |
| Consecutive Dry Years 1st Year | 2013 | 23,100 | 100% |
| Consecutive Dry Years 2nd Year | 2014 | 23,100 | 100% |
| Consecutive Dry Years 3rd Year | 2015 | 23,100 | 100% |
| Consecutive Dry Years 4th Year | 2016 | 23,100 | 100% |
| Consecutive Dry Years 5th Year | 2017 | 23,100 | 100% |
| Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table. | | | |
| *Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | |
| NOTES: Units are in acre-feet (AF). Available groundwater supply is based on the projected groundwater supply that is reasonably available. COSMUD assumes that the reasonably available groundwater for the current water service area (approximately 38,500 acres) is pumped at 0.6 ac-ft/acre/yr, equivalent to an annual groundwater supply of 23,100 ac-ft/yr. | | | |

7.1.3 Water Service Reliability

In this section, the City's normal, single dry, and five-consecutive-year drought projected supplies and demands are integrated and compared. Projected water demands are detailed in Chapter 4 and projected water supplies are detailed in Chapter 6. Under the various water year types, the total annual water supply sources available are compared to the total annual projected water use for the COSMUD water service area from 2025 to 2045 in five-year increments.

The City's primary water sources during base years are surface water from the San Joaquin River and WID, and purchased water from SEWD. These water supply sources complement each other. When water diversion from the San Joaquin River is curtailed due to environmental restrictions, COSMUD obtains

supplemental water supply from WID. Groundwater supply is used conjunctively with the surface water supplies to meet increased water demands primarily in the summer months. COSMUD plans to continue to optimize each of its water supply sources to meet projected water demands.

7.1.3.1 Water Service Reliability – Normal Year

Projected normal year supply from Chapter 6 and projected demands from Chapter 4 are compared in Table 7-6. The City's water supplies are reliable during normal years. No water supply shortage is anticipated during normal years through 2045.

Table 7-6. Normal Year Supply and Demand Comparison (DWR Table 7-2 Retail)

| | 2025 | 2030 | 2035 | 2040 | 2045 (Opt) |
|--|--------|--------|--------|--------|------------|
| Supply totals (autofill from DWR Table 6-9) | 77,300 | 85,200 | 85,400 | 85,400 | 85,400 |
| SEWD | 24,300 | 24,300 | 24,300 | 24,300 | 24,300 |
| WID | 6,500 | 13,000 | 13,000 | 13,000 | 13,000 |
| San Joaquin River | 23,400 | 24,800 | 25,000 | 25,000 | 25,000 |
| Groundwater Wells | 23,100 | 23,100 | 23,100 | 23,100 | 23,100 |
| Demand totals (autofill from DWR Table 4-3) | 34,789 | 37,878 | 43,161 | 48,444 | 48,444 |
| Difference | 42,511 | 47,322 | 42,239 | 36,956 | 36,956 |
| NOTES: Units are in AF (acre-feet). | | | | | |

7.1.3.2 Water Service Reliability – Single Dry Year

Projected single dry year supply and projected demands are compared in Table 7-7. Key assumptions for each supply source are summarized as follows:

- Under single dry year conditions, approximately one-third of the SEWD contractual minimum volume, 20,000 AF, is assumed to be available for the COSMUD water service area.
- As shown in Table 7-3, the volume available from the San Joaquin River was approximately 93 percent of the normal year volume during the single-dry year in 2015. Approximately 93 percent of the projected available volume under normal year conditions (see Table 7-6) is assumed to be available for a single dry year.
- Projected WID supply will be reduced to 4,500 AF. Anticipated annexation of agricultural lands north of Stockton would increase available supplies during a single dry year to 9,000 AF starting in 2030.
- The reasonably available groundwater volume, 23,100 AF, is assumed to not change through 2045 for single dry year conditions.

Projected single dry year supply and projected demands are compared in Table 7-7. No water supply shortage is anticipated during single dry years through 2045. The City's water supplies are reliable during single dry years.

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

| | 2025 | 2030 | 2035 | 2040 | 2045 (Opt) |
|--|--------|--------|--------|--------|------------|
| Supply totals* | 56,100 | 61,900 | 62,100 | 62,100 | 62,100 |
| SEWD | 6,700 | 6,700 | 6,700 | 6,700 | 6,700 |
| WID | 4,500 | 9,000 | 9,000 | 9,000 | 9,000 |
| San Joaquin River | 21,800 | 23,100 | 23,300 | 23,300 | 23,300 |
| Groundwater Wells | 23,100 | 23,100 | 23,100 | 23,100 | 23,100 |
| Demand totals* | 34,789 | 37,878 | 43,161 | 48,444 | 48,444 |
| Difference | 21,311 | 24,022 | 18,939 | 13,656 | 13,656 |
| *Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | | | |
| NOTES: Units are in acre-feet (AF). | | | | | |

7.1.3.3 Water Service Reliability – Five-Consecutive-Dry Years

This section evaluates projected five-consecutive-dry year droughts which start in 2025, 2030, 2035, 2040, and 2045. Key assumptions for each supply source are summarized as follows:

- Available supply from SEWD is summarized in Table 7-8. SEWD, COSMUD, and Cal Water coordinated for the preparation of this UWMP. Based on historical Urban Contractors allocations, the SEWD supply for the COSMUD water service area is assumed to be approximately one-third of the total SEWD supply available. Consistent with Section 7.1.2.1, SEWD available supply during the consecutive dry first year is estimated to equal the available supply during the normal year. SEWD available supply during the consecutive dry second year is expected to slightly decrease. SEWD available supply during the driest years—consecutive dry third and fourth years—is estimated to be the one third of the minimum contractual amount to its Urban Contractors. SEWD available supply for COSMUD is expected to return to normal year volume available by the consecutive dry fifth year.

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Table 7-8. Available Supply from SEWD During Five-Consecutive-Dry Years, AF

| Supply Source | 2025 | 2030 | 2035 | 2040 | 2045 |
|--|--------|--------|--------|--------|--------|
| SEWD Available Supply to Urban Contractors [1] | 72,800 | 72,800 | 72,800 | 72,800 | 72,800 |
| SEWD Available Supply to COSMUD During Normal Year [2] = $1/3 \times [1]$ (1/3 of SEWD Supply to Urban Contractors) | 24,300 | 24,300 | 24,300 | 24,300 | 24,300 |
| Consecutive Dry First Year [2] (same as Normal Year) | 24,300 | 24,300 | 24,300 | 24,300 | 24,300 |
| Consecutive Dry Second Year [3] = $([2] + [4]) / 2$ (average of First Year and Third Year) | 15,500 | 15,500 | 15,500 | 15,500 | 15,500 |
| Consecutive Dry Third Year [4] = $1/3 \times 20,000$ AF | 6,700 | 6,700 | 6,700 | 6,700 | 6,700 |
| Consecutive Dry Fourth Year [4] = $1/3 \times 20,000$ AF | 6,700 | 6,700 | 6,700 | 6,700 | 6,700 |
| Consecutive Dry Fifth Year [2] (same as Normal Year) | 24,300 | 24,300 | 24,300 | 24,300 | 24,300 |

- Available supply from the San Joaquin River is estimated by multiplying the projected available volume summarized in Table 6-14 (DWR 6-9 Retail) by the percent of average supply available shown in Table 7-3 for each respective dry year.
- Available supply for WID is estimated to remain the same as shown in Table 7-4 for 2025 through 2029. By 2030, water supply from WID is anticipated to double due to the annexation of agricultural lands north of the City.
- The reasonably available groundwater volume, 23,100 AF, is not anticipated to change through 2045.

Projected Five-Consecutive-Year Dry Years supply and projected demands are compared in Table 7-9.

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Table 7-9. Multiple Dry Years Supply and Demand Comparison (DWR Table 7-4 Retail)

| | | 2025* | 2030* | 2035* | 2040* | 2045* (Opt) |
|--|-------------------|--------|--------|--------|--------|----------------|
| First year | Supply totals | 74,800 | 82,500 | 82,700 | 82,700 | 82,700 |
| | SEWD | 24,300 | 24,300 | 24,300 | 24,300 | 24,300 |
| | WID | 6,500 | 13,000 | 13,000 | 13,000 | 13,000 |
| | San Joaquin River | 20,900 | 22,100 | 22,300 | 22,300 | 22,300 |
| | Groundwater Wells | 23,100 | 23,100 | 23,100 | 23,100 | 23,100 |
| | Demand totals | 34,789 | 37,878 | 43,161 | 48,444 | 48,444 |
| | Difference | 40,011 | 44,622 | 39,539 | 34,256 | 34,256 |
| Second year | Supply totals | 66,800 | 74,600 | 74,800 | 74,800 | 74,800 |
| | SEWD | 15,500 | 15,500 | 15,500 | 15,500 | 15,500 |
| | WID | 6,500 | 13,000 | 13,000 | 13,000 | 13,000 |
| | San Joaquin River | 21,700 | 23,000 | 23,200 | 23,200 | 23,200 |
| | Groundwater Wells | 23,100 | 23,100 | 23,100 | 23,100 | 23,100 |
| | Demand totals | 35,407 | 38,935 | 44,218 | 48,444 | 48,444 |
| | Difference | 31,393 | 35,665 | 30,582 | 26,356 | 26,356 |
| Third year | Supply totals | 56,100 | 61,900 | 62,100 | 62,100 | 62,100 |
| | SEWD | 6,700 | 6,700 | 6,700 | 6,700 | 6,700 |
| | WID | 4,500 | 9,000 | 9,000 | 9,000 | 9,000 |
| | San Joaquin River | 21,800 | 23,100 | 23,300 | 23,300 | 23,300 |
| | Groundwater Wells | 23,100 | 23,100 | 23,100 | 23,100 | 23,100 |
| | Demand totals | 36,025 | 39,991 | 45,274 | 48,444 | 48,444 |
| | Difference | 20,075 | 21,909 | 16,826 | 13,656 | 13,656 |
| Fourth year | Supply totals | 55,000 | 60,700 | 60,900 | 60,900 | 60,900 |
| | SEWD | 6,700 | 6,700 | 6,700 | 6,700 | 6,700 |
| | WID | 4,500 | 9,000 | 9,000 | 9,000 | 9,000 |
| | San Joaquin River | 20,700 | 21,900 | 22,100 | 22,100 | 22,100 |
| | Groundwater Wells | 23,100 | 23,100 | 23,100 | 23,100 | 23,100 |
| | Demand totals | 36,642 | 41,048 | 46,331 | 48,444 | 48,444 |
| | Difference | 18,358 | 19,652 | 14,569 | 12,456 | 12,456 |
| Fifth year | Supply totals | 78,300 | 86,300 | 86,500 | 86,500 | 86,500 |
| | SEWD | 24,300 | 24,300 | 24,300 | 24,300 | 24,300 |
| | WID | 6,500 | 13,000 | 13,000 | 13,000 | 13,000 |
| | San Joaquin River | 24,400 | 25,900 | 26,100 | 26,100 | 26,100 |
| | Groundwater Wells | 23,100 | 23,100 | 23,100 | 23,100 | 23,100 |
| | Demand totals | 37,260 | 42,104 | 47,387 | 48,444 | 48,444 |
| | Difference | 41,040 | 44,196 | 39,113 | 38,056 | 38,056 |
| *Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | | | | |
| NOTES: Units are in acre-feet (AF). | | | | | | |

7.2 DESCRIPTION OF MANAGEMENT TOOLS AND OPTIONS

As described in Chapter 6, COSMUD plans to continue optimize its existing water supply sources to meet projected water demands during the different base years. Table 6-12 (DWR Table 6-7R) shows expected future water supply projects that COSMUD anticipates completing. These projects include the North Stockton Pipeline Hypochlorite Facility Project, the increase WID supply by service area annexation, and AMI installation. The North Stockton Pipeline Hypochlorite Facility Project will increase supply reliability by allowing the COSMUD North Stockton water service area to be supplied by the DWTP and SEWD without the formation of undesirable byproducts due to different potable water treatment processes. The WID supply is anticipated to increase as agricultural lands north of the City are annexed. AMI installation will allow COSMUD to monitor customers' water use in real-time and provide customers with the ability to access and better manage their water use. The three projects will increase water reliability, supply, and efficiency.

As described in Section 6.5.4, the City's 2020 Water Master Plan Update recommended a groundwater study and groundwater storage bank study to increase water supply reliability. COSMUD will continue to monitor its existing water supply sources and coordinate with SEWD, its wholesaler, and the other Urban Contractors to manage the local water resources.

7.3 DROUGHT RISK ASSESSMENT

CWC §10635(b) requires that the City prepare a DRA based on the supply condition associated with the five driest consecutive years on record. This supply condition is to be assumed to occur over the next five years, from 2021 through 2025.

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. 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 COSMUD.

This DRA would allow COSMUD to prepare for a potential water shortage and for implementation of its Water Shortage Contingency Plan, if necessary. Findings show that, should the region experience a five-consecutive-dry-years period starting in 2021, adequate water supplies are available to meet projected demands.

7.3.1 Data, Methods, and Basis for Water Shortage Condition

The DRA was performed for 2021 through 2025 using the same five-consecutive-dry-years period conditions presented in Section 7.1.2. The 2025 projected water demand is based on water demand projections developed for the City's recent Water Master Plan Update² and is estimated based on the anticipated growth within the COSMUD water service area as defined by the Envision Stockton 2040 General Plan, adopted by the Stockton City Council in December 2018. Future study areas and planned development in the COSMUD water service area were reviewed and confirmed with the City's Community Development Department. Water demand projections in this UWMP include the COSMUD entire water service area, including the Walnut Plant area in Central Stockton. Future water demands for 2021 through 2025 were linearly interpolated between the 2020 actual water demand and the 2025 projected water demand.

² West Yost Associates, January 2021. City of Stockton Water Master Plan Update.

Water supplies for the five consecutive dry years, summarized in Section 7.1.2, were applied to the drought risk assessment for supplies available in 2021 through 2025.

7.3.2 DRA Water Source Reliability

The City's projected available water supply for each year of the DRA is presented in Table 7-10. Chapter 6 provides an in-depth discussion on the reliability of each water supply source. Key assumptions for each supply source are summarized as follows:

- The available SEWD supply during the DRA was estimated by applying available supply projections for a five-year drought based on the SEWD supply availability discussed above in Section 7.1.2.1.
- The San Joaquin River available supply during the DRA was estimated using the available supply from the Petition for Extension of Time and the percent of average supply for each consecutive dry year summarized in Table 7-3. The DRA first year, 2021, is assumed to have the same volume available, 20,500 AF, as the normal year shown in Table 7-3. San Joaquin River available supply by the DRA fifth year, 2025, is assumed to be equal to the projected volume available, 23,400 AF, as shown in the Petition for Extension of Time with no reductions. Available supply for the DRA interim years, 2022 through 2024, was estimated by first linearly interpolating between the estimated available supply for 2021 and 2025 and then multiplying the available volume by the percent of average supply for each respective consecutive year in Table 7-3. This approach simulates supply reductions during the second, third, and fourth consecutive years during the DRA.
- The WID available supply during the DRA is estimated to remain the same as summarized in Table 7-4 and the 2025 column of Table 7-9.
- The reasonably available groundwater volume, 23,100 AF, is not anticipated to change during the DRA.

Table 7-10. Projected Water Supplies Available for Drought Risk Assessment

| Supply Source | 2021 | 2022 | 2023 | 2024 | 2025 |
|-------------------|---------------|---------------|---------------|---------------|---------------|
| SEWD | 24,300 | 15,100 | 6,700 | 6,700 | 24,300 |
| San Joaquin River | 20,500 | 19,700 | 20,500 | 20,000 | 23,400 |
| WID | 6,500 | 6,500 | 4,500 | 4,500 | 6,500 |
| Groundwater | 23,100 | 23,100 | 23,100 | 23,100 | 23,100 |
| Total | 74,400 | 64,800 | 54,800 | 54,300 | 77,300 |

Notes: Units are acre-feet (AF).

7.3.3 Total Water Supply and Use Comparison

As shown in Table 7-11, during a five-year drought beginning in 2021, the City's supplies are projected to be adequate to meet projected demands through 2025, even without water conservation.

Table 7-11. Five-Year Drought Risk Assessment Tables to Address Water Code Section 10635(b)
(DWR Table 7-5)

| 2021 | Total |
|---|--------|
| Total Water Use | 34,481 |
| Total Supplies | 74,400 |
| Surplus/Shortfall w/o WSCP Action | 39,919 |
| Planned WSCP Actions (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 39,919 |
| Resulting % Use Reduction from WSCP action | 0% |
| 2022 | Total |
| Total Water Use | 34,558 |
| Total Supplies | 64,800 |
| Surplus/Shortfall w/o WSCP Action | 30,242 |
| Planned WSCP Actions (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 30,242 |
| Resulting % Use Reduction from WSCP action | 0% |
| 2023 | Total |
| Total Water Use | 34,635 |
| Total Supplies | 54,800 |
| Surplus/Shortfall w/o WSCP Action | 20,165 |
| Planned WSCP Actions (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 20,165 |
| Resulting % Use Reduction from WSCP action | 0% |
| 2024 | Total |
| Total Water Use | 34,712 |
| Total Supplies | 54,300 |
| Surplus/Shortfall w/o WSCP Action | 19,588 |
| Planned WSCP Actions (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 19,588 |
| Resulting % Use Reduction from WSCP action | 0% |
| 2025 | Total |
| Total Water Use | 34,789 |
| Total Supplies | 77,300 |
| Surplus/Shortfall w/o WSCP Action | 42,511 |
| Planned WSCP Actions (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 42,511 |
| Resulting % Use Reduction from WSCP action | 0% |

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CHAPTER 8

Water Shortage Contingency Plan

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

In 2018, the California State Legislature (Legislature) enacted two policy bills, SB 606 (Hertzberg) and AB 1668 (Friedman) in 2018. This legislation established a new foundation for long-term improvements in water conservation and drought planning to adapt to future climate change and the probability of longer and more intense drought periods in California. The 2018 Water Conservation Legislation set new requirements for water shortage contingency planning.

8.1 CITY WATER SHORTAGE CONTINGENCY PLAN

The City's WSCP is included in this UWMP as Appendix I. The WSCP describes the City's strategic plan in preparation for and responses to water shortages. It includes water shortage stages and associated actions that will be implemented in the event of a water supply shortage. As part of the WSCP, the City's legal authorities, communication protocols, compliance and enforcement, and monitoring and reporting are included. Stockton Municipal Code (SMC) Chapter 13.28 Water Conservation and SMC Chapter 13.32 Water Shortage Emergencies supports the City's WSCP actions.

The City's WSCP has been updated so that it is consistent with the 2018 Water Conservation Legislation requirements. The City plans to revise SMC Chapter 13.28 and SMC Chapter 13.32 so that it is consistent with these updates.

The City intends for its WSCP to be an adaptive and resilient management plan so that it may assess response action effectiveness and adapt, over the long-term, to foreseeable and unforeseeable events. It may also be updated to conform to State legislative and regulatory requirements as necessary. The City's WSCP is included as Appendix I so that it may be updated outside of the UWMP preparation process.

When an update to the WSCP is proposed, the revised WSCP will undergo the process described in Section 8.3 for adoption by the City Council and distribution to San Joaquin County, its customers, and the general public.

8.2 SEISMIC RISK ASSESSMENT AND MITIGATION PLAN

CWC §10632.5(a) requires that the UWMP include a seismic risk assessment and mitigation plan to assess the vulnerability of the COSMUD water system vulnerabilities and mitigate those vulnerabilities. A Local Hazard Mitigation Plan (LHMP) may be incorporated in this UWMP to address this requirement if it addresses seismic risk. The City participated in the development of a regional LHMP led by San Joaquin County. The *San Joaquin County 2017 Local Hazard Mitigation Plan* (2017 LHMP), was adopted by the County on March 20, 2018. The 2017 LHMP was submitted to the Federal Emergency Management Agency (FEMA), which found it in conformance with Title 44 Code of Federal Regulations Part 201.6 Local Mitigation Plans.

Earthquakes are common, relatively well-tracked and studied in California. The 2017 LHMP considered the risk of the region to earthquakes. Because no earthquake has occurred in the last 100 years on local fault lines, earthquake hazard was not addressed in the 2017 LHMP.¹ Thus, it is not included in this UWMP.

In accordance with America's Water Infrastructure Act (AWIA), the City completed a Risk and Resilience Assessment (RRA) of its water system in March 2020. The RRA systematically evaluated COSMUD's assets, threats, and risks, and evaluated countermeasures that might be implemented to minimize overall risk to the system. Vulnerability to natural hazards, including earthquakes, was assessed based on COSMUD's level of preparation/resilience, active response capability, and ability to recover. An earthquake with very strong to severe shaking, causing moderate to heavy damage, was determined to have an annual likelihood of 0.0240 percent and a recurrence interval of 4,000 years. The Environmental Protection Agency (EPA) provides guidance on countermeasures for retrofitting tanks. It recommends anchoring tanks to foundations, strengthening tank walls, replacing non-flexible pipe connections, and improving roof structures over large reservoirs. Automatic shutoff valves at tanks are also suggested.

The City's efforts in addressing its seismic vulnerabilities are in progress. COSMUD most recently completed an initial seismic assessment of its chlorination facilities, wells, reservoirs, and pump stations in June 2020.

To ensure the security of the COSMUD water system, the RRA and the initial seismic assessment are retained by the City as confidential documents.

8.3 WATER SHORTAGE CONTINGENCY PLAN ADOPTION, SUBMITTAL, AND AVAILABILITY

The City's WSCP (Appendix I) is adopted concurrently with the COSMUD 2020 UWMP, by separate resolution. 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 of adoption, copies of the WSCP will be available at the City's offices. A copy will also be provided to San Joaquin County. An electronic copy of the WSCP will also be available for public review and download on the City's website.

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

¹ San Joaquin County 2017 Local Hazard Mitigation Plan, p. 11.

CHAPTER 9

Demand Management Measures

The City implements demand management measures 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. The implementation of demand management measures 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 implementation of DMMs, and projected future conservation implementation.

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 14 DMMs and turned to key water conservation measures implemented to achieve SB X7-7 water use targets. For retail agencies, 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 an ongoing water conservation program and is committed to implementing water conservation measures for all COSMUD customer sectors. Narrative descriptions addressing the nature and extent of each DMM implemented over the past five years, from 2016 through 2020 are provided in the following sections. Planned or continued implementation of each of the DMMs are also discussed.

In its 2015 UWMP, the City's SB X7-7 per capita water use target for 2020 was confirmed to be 165 GPCD. The DMMs that the City implemented have allowed it to meet its 2020 per capita water use target. In 2020, COSMUD's overall per capita water use was 158 GPCD as shown in Chapter 5.

9.2 DEMAND MANAGEMENT MEASURES

The six DMMs required to be described in the 2020 UWMP include 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 that it has implemented that have had significant impact on water use.

For each of the DMMs, the current program is described, followed by a description of how the DMM was implemented over the previous five years to achieve its water use targets. The City's active water conservation program was tailored to meet its 2020 per capita water use target of 165 GPCD. As shown in Chapter 5, the City met its SB X7-7 water use target, achieving 158 GPCD in 2020.

The City plans to maintain its water conservation program for conformance with its 2014 Climate Action Plan. By implementing its water conservation program, the City may reduce its greenhouse gas emissions from importing, treating and distributing water, and treating wastewater, and adapting to changes in water supply availability due to climate change.

Furthermore, the City anticipates continuing and possibly expanding its water conservation program to meet potential new legislative and upcoming regulatory requirements that may further lower the SB X7-7 target.

9.2.1 Water Waste Prevention Ordinances

9.2.1.1 DMM Description

SMC Chapter 13.28 (Appendix J) is dedicated to water conservation and regulates water use. SMC Section 13.28.030 prohibits water waste by restricting specific uses, including hosing off hardscapes, washing automobiles and boats with hoses not equipped with a shut-off valve, and watering lawns in a manner that causes runoff. Furthermore, the SMC prohibits pools from being filled or drained between June 1 and October 1. The restrictions are enforceable per SMC Section 13.28.090 and are administered by COSMUD. The City routinely reviews and updates its water conservation ordinance. In response to Executive Order B-40-17, the City updated SMC Section 13.28.030 in August 2017 to incorporate permanent restrictions to prohibit wasteful practices.

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

The City implemented this DMM over the past five years. Water waste complaints and violations are received and investigated by COSMUD staff and addressed via door hangers and/or direct contact in person or via telephone with tenants and property owners. Complaints and violations are opened, tracked, and closed in the COSMUD Monthly Operations and Maintenance Report. Between 2016 and 2020, the COSMUD responded to over 480 complaints and violations.

9.2.1.3 Plans for Continued Implementation

The City will continue to implement this DMM. Although water savings from this program cannot be directly quantified, this DMM is expected to help the City achieve its future water use objectives by minimizing the nonessential uses of water so that water is available to be used for human consumption, sanitation, and fire protection.

9.2.2 Metering

9.2.2.1 DMM Description

Since 1954, the entire COSMUD service area has been fully metered and all connections are billed based on the volume of water used. In addition, customers are classified by meter type and size including single-family residential, multi-family residential, non-residential, and irrigation accounts. All customer sectors are billed based on metered consumption. The City's current water rate schedule is provided on the City's website. For single-family residential customers, the City currently uses an increasing block rate structure with two tiers, where water consumption greater than 15 units (1,500 cubic feet or 11,220 gallons) is charged a higher unit rate. Multi-family residential, non-residential, and irrigation accounts are charged based on seasonal metered rates, where summer rates are higher.

When the City declares a water shortage, potable water rates include a drought recovery charge for all customers in stages to encourage water conservation and recover revenue needed to operate the water system with declining water sales. For additional information on City's current water rate structure, see Section 9.2.3.

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

This DMM is fully implemented and the City will continue to install and read meters on all new services. Between 2016 to 2020, all water connections are metered and billed based on the volume of water used, as discussed in further detail under Section 9.2.3.

9.2.2.3 Plans for Continued Implementation

Continued implementation of this DMM is expected to help the City achieve its water efficiency goals by providing accurate water use information to the customer and the City. The meters allow the City to track customer water use and compare current use to historical data. They also allow customers to make informed decisions in managing their water use.

As discussed in Section 6.8.3, COSMUD may potentially implement an AMI project when funding becomes available. Other communities have shown that AMI has provided customer water savings and improved water conservation due to the availability of real-time consumption information. COSMUD may potentially commence implementation of this project between 2020 and 2025.

9.2.3 Conservation Pricing

9.2.3.1 DMM Description

As discussed above, all customer sectors are billed for water service based on actual metered consumption using the City water rate schedule. Conservation pricing structure is integrated into the rates. Single-family residential users have tiered rates, where uses greater than 15 hundred cubic feet (CCF) are billed at higher rates. Multi-family residential, non-residential, and irrigation users have seasonal rates, where uses during the summer season are higher. The higher rates are imposed to encourage customers to minimize water use. The City's water conservation ordinance allows the City to raise water rates during declared water emergencies.

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

The City routinely reviews and updates its water rates. The City's water rates include water conservation pricing and drought recovery charges that are correlated to customer class, drought stage, and reduction level. Under water shortage conditions, the drought rates are implemented to encourage compliance to demand reduction actions described in Appendix I, Section 8. The City evaluates the effectiveness of conservation rates by tracking changes in unit water use resulting from rate increases.

In 2015, the Governor signed Executive Order B-29-15 which ordered mandatory water reductions and ordered implementation of conservation measures in response to the 2014-2016 drought. When the City adopted new water rates in 2016, it also implemented a drought recovery charge. The drought recovery charge would provide sufficient revenues for the City to meet additional water supply pumping and conservation program costs, and to offset the revenue loss resulting from decreased consumption due to conservation. Although water production cost decreased due to low consumption, the City must meet significant fixed operational costs that do not vary with water production levels.

The Governor's Drought State of Emergency was terminated in 2017 but mandates for water conservation remained in place. The drought recovery charge remained in place until the City's water consumption projections and water rates were able to meet the City's financial obligations. In 2018, City Council terminated the drought recovery charge.

9.2.3.3 Plans for Continued Implementation

The City plans to maintain the conservation pricing structure in future rate adjustments. In parallel with the preparation of this 2020 UWMP, the City is conducting a Water Rate Study and anticipates adopting updated water rates in Spring 2021. The City's latest water rates are available at www.stocktonca.gov. This DMM is expected to help the City achieve its water efficiency goals 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 provides water conservation information as part of COSMUD's outreach program. In promoting water conservation, the City seeks to foster sustainable changes in behavior, not just temporary responses to drought.

Water supply information is shared in a public forum. The City's Water Advisory Group, Council Water Committee, and City Council periodically receive water supply updates from City staff. The update includes information regarding anticipated water supplies and provides an overview of the COSMUD water use and conservation programs.

The water conservation program's public education and outreach activities include the following activities:

1. Track and record event attendance and "impressions"
2. Maintain current program information on website
3. Assist with development and implementation of annual Water Awareness Campaigns
4. Maintain Water Conservation Hotline
5. Maintain current information on "phone tree"
6. Retrieve and reply to messages/requests for information
7. Update the City's website with information on the City's water conservation programs
8. Maintain WaterFacts dedicated email inbox
9. Maintain City's Waterwise Landscaping website

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

The City includes funding for public education and outreach in its annual operating budget. Between 2016 and 2020, the City's average annual operating budget to maintain its public education and outreach is \$192,952. The current draft 2020/2021 budget for the City's public information programs is \$164,260, which includes labor, program, and advertising.

Components of the City's public education and outreach, including a water conservation website, water conservation education, WaterSense partnership, and outreach information distribution, are discussed in further detail below.

9.2.4.2.1 Water Conservation Website

The City maintained a water conservation website on the COSMUD web page between 2016 and 2020 and will continue to maintain the website for its customers. The [website](#) provides information on water use restrictions and links to valuable water conservation information as follows:

- City water conservation regulations:
[Stockton Municipal Code Section 13.28.030](#)
- Water use restrictions and conservation tips:
http://www.stocktongov.com/files/Water_Restrictions_Conervation_Tips.pdf
- Greater Stockton Chamber of Commerce's Recycling Energy Air Conservation Program, which provides water conservation assessment:
<http://www.greenteamsanjoaquin.com/REACON>
- Water wise gardening, which provides landscaping resources, tips, and virtual tours and photo galleries of local low-water use gardens:
<http://www.stockton.watersavingplants.com/>
- WaterSense program, which provides information on water-saving devices and other informational resources:
<https://www.epa.gov/watersense>

Furthermore, the website provides a telephone number and includes a link to a form for the public to report water waste: [Report Water Wasting](#).

9.2.4.2.2 Water Conservation Education

The City's public information and school education program is an ongoing, annual program. The City provides water conservation education as part of the community and school outreach program through their participation in SAWS. The SAWS group, which includes SEWD, Cal Water, San Joaquin County, and the City, believes that providing water education in elementary and secondary schools is highly effective in reaching the public at large because young children are apt to share the lessons they learn in class with their parents, siblings, and extended families.

The City works cooperatively with SAWS to develop and distribute water conservation information to K-6 grade students in public and private schools. Educational materials, pamphlets, and guidance to classroom activities highlight the value of water and ways to conserve. SAWS water conservation materials are included with teacher packets for classroom presentations and are discussed during classroom programs. Examples of materials used in public education programs are shown in Appendix K.

Between 2016 and 2020, the SAWS Water Conservation Program reached an average of 23,300 K-6 grade students annually. The program provided outreach in various formats including: a large assembly program, in-class presentations, after-school programs, booths at festivals and community events, and various workshops. The City collaborates with SAWS to develop teacher and student surveys to measure the effectiveness of the outreach campaign. All comments are tracked, and programmatic adjustments are made based on the information received. The 2019/2020 SAWS Water Conservation Program report provided in Appendix K reflects school year activities and plans that are normally included in the program.

The SAWS Water Conservation Program's budget is authorized annually. For the April 1, 2020 to March 31, 2021 term, the program has an authorized budget of \$187,000.

9.2.4.2.3 WaterSense Partnership

As a United States Environmental Protection Agency (USEPA) WaterSense Partner, the City utilizes available promotion materials and actively promotes water awareness. The WaterSense Program provides guidance on water-efficient products and resources to improve water savings.

9.2.4.2.4 Outreach Information Distribution

The City distributes water conservation outreach literature throughout City departments and to various community centers and libraries. The City also distributes outreach literature and develops hands-on activities at community events. Community events include Family Day in the Park, Black Family Day, Cinco de Mayo, Earth Day Festival, Recycling Exposition (REXPO), Senior Day, National Night Out, Stockton Ports Educational Days, and State of the City.

The City implemented this program between 2016 and 2020, providing outreach in the above-listed community events. It plans on continuing this program to meet future water use objectives.

9.2.4.3 Plans for Continued Implementation

Continued implementation of this DMM is expected to help the City achieve its water efficiency goals 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

COSMUD has a continuous distribution system water audit program in place. A water audit is a process of accounting for water use throughout a water system in order to quantify the unaccounted-for water. Unaccounted-for water is the difference between metered production and metered consumption on a system-wide basis.

A leak detection program typically consists of both visual inspection. Visual inspection includes the inspection of distribution system appurtenances (e.g., fire hydrants, valves, meters, etc.) to identify obvious signs of leakage. When needed, the City employs leak detection tools to locate the source of the leak. Under the program, COSMUD documents unmetered consumption in its Monthly Operations and Maintenance Report.

The City performs an annual water audit that conforms to the AWWA Method 36. The City's 2015 to 2019 AWWA Water Loss Audits are included in Appendix E and summarized in Chapter 4.

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

The City implemented this program between 2016 and 2020, documenting the water losses described in greater detail below. The total amount of water conserved over the five-year period by implementing this DMM is directly related to the percentage of unaccounted-for water loss leaving the system. Between 2016 and 2019, the City's average annual water loss is 9.6 percent of total water supply.

Specific information on the City's water loss programs with regard to leaks and breaks, water system flushing, and other water system losses are described below:

- **Leaks and Breaks.** All water meter leaks, service line, main break and manifold leaks are reported to the City by customers calling in or by a system generated work order. All leaks/breaks are documented in the City's Computerized Maintenance Management System (CMMS). Communication with the customer, along with the following information are also documented: date and time of reported leak, name of person responding to the call, type of leak, work done, customer side or city leak, and time to complete. All meter leaks and emergency breaks are repaired the same day they are reported. Non-emergency service line and main breaks are usually held until a 48-hour Underground Service Alert is completed. Total water loss from main and service line breaks are estimated by using the pipe size, duration of the leak, and volume of water leaking. Meter leak water loss are estimated based on the volume of water found and duration of the leak.
- **Water System Flushing.** To maintain water quality, COSMUD flushes its water system annually through fire hydrants. The time spent flushing is documented in the CMMS. Hard copies of each hydrant flushed and the duration of flushing are kept as records. Water loss volumes are estimated by volume of water being flushed and time flushed multiplied by the number of hydrants flushed.
- **Other Water System Losses.** City fire flow tests, commercial and residential construction usage, and equipment testing are sources of water loss that are estimated based on the number of tests performed and number of new construction sites. The City is in the process of updating its methods of measuring street sweeping water usage by tracking metered volumes instead of load counts.

9.2.5.3 Plans for Continued Implementation

The City is committed to maintaining a goal of an average of eight percent or less unaccounted-for water annually. The City will continue to implement this DMM as part of COSMUD's ongoing operations and maintenance program. Implementation of this DMM is expected to help the City achieve its water efficiency goals by identifying sources of water loss quickly so repairs can be made, and losses are minimized.

9.2.6 Water Conservation Program Coordination and Staffing Support

9.2.6.1 DMM Description

Water Conservation Program coordination is conducted by the City's Water Resources Program Manager. The Program Manager administers the DMMs discussed in this chapter, estimates water conservation savings achieved, and establishes an annual program budget based on available funding and resources. The Program Manager's duties include:

1. Tracking the City's water conservation program accomplishments and preparing an annual report
2. Developing water conservation goals for the upcoming year
3. Coordinating with City staff to conduct water use surveys and to update the monthly operations and maintenance report (MOMR)

4. Tracking COSMUD's water production and demands and submitting monthly urban water supplier monitoring reports to the State
5. Preparing annual USEPA report

9.2.6.2 Plans for Continued Implementation

The implementation of this DMM is ongoing and is expected to help the City achieve its water efficiency targets by making water conservation and implementation of its water conservation program a priority among the City employees and the agencies that manage its external water supply sources.

9.2.7 Other Demand Management Measures

The City implements several other residential and non-residential demand management measures as described in this section.

9.2.7.1 Water Survey Program for Single-Family and Multi-Family Residential Customers

The City offers complimentary water use surveys as requested by single- and multi-family residential customers. Indoor and outdoor water use surveys are conducted by City staff. The indoor water use survey consists of water use evaluation for appliances, such as dishwashers, washing machines, toilets, and faucets. The outdoor water use survey consists of evaluation of landscaping and irrigation systems. The customer's water meter is observed to ensure no leaks are occurring. Following completion of the survey, customers are provided with a low-flow water efficiency kit.

Upon request, the City also offers residents self-surveys for water efficiency. The City provides instructions and forms for residents. Upon completion and submittal of the forms, the City provides residents water efficiency kits.

This program is ongoing but the City currently does not track the number of requests.

9.2.7.2 Residential Plumbing Retrofit

To promote residential water efficiency and encourage retrofits, the City offers low-flow water efficiency kits. The low-flow water efficiency kit includes two 1.5 gpm low-flow showerhead(s), a 1.5 gpm kitchen faucet aerator, two 1.0 gpm bathroom aerators, toilet flapper, an auto-shutoff garden hose nozzle, shower timer, landscape moisture meter, and a 2.5 gallon water bucket.

In addition to providing low-flow water use efficiency kits to residents participating in the water survey program, the City distributes these kits at community events and as requested through the City website and phone calls through 866-STOKWTR. The City advertises their availability through utility bill inserts.

This program is ongoing but the City currently does not track the number of water use efficiency kits distributed. The City will continue to maintain inventory and offer low-flow water use efficiency kits.

Implementation of this measure is supported by the City's Climate Action Plan (ICF International, 2014), which calls for promoting water efficiency for existing development.

9.2.7.3 Water-Efficient Landscape Program

The City's landscape conservation program consists of implementing a water efficient landscape program and contracting with Waterfluence to encourage efficient irrigation of large landscape areas. These programs are described in further detail in this section.

This DMM is fully implemented. Between 2016 and 2020, all new landscaping associated with projects requiring building permits are subject to the requirements of the State's Model Water Efficient Landscape Ordinance (MWELO), described in the Model Water Efficient Landscape Program.

9.2.7.3.1 Model Water Efficient Landscape Program

The City has adopted landscape standards that are water efficient and incorporated the standards in its municipal code. SMC Section 16.56.040, included as Appendix L, requires compliance with the State's MWELO for new landscaping. This requirement is supported by the City's Climate Action Plan (ICF International, 2014), which lists promotion of the use of water efficient landscaping as a supporting action.

MUD coordinates with other City Departments (Community Development Department and Utility Billing) to obtain information applicants submit during the permitting process to develop and track water budgets. The City develops and establishes water budgets for landscape customers before installation of MWELO landscapes.

9.2.7.3.2 Water Conservation Program for Large Landscape Users

The City maintains a contract with Waterfluence to encourage water efficient irrigation for large landscape customers, which typically irrigate commercial and public landscapes. Customer participation is voluntary, and the services offered are complementary. Between 2016 and 2020, the 125 large landscape sites (261 meters) have participated in this program.

Waterfluence provides services to analyze and monitor irrigation water use for large landscape customers. Site and water use information is hosted on Waterfluence's website and may be accessed by customers, including their authorized representatives—property owners, property managers, HOA board members, maintenance staff, or landscape contractors. Customers may review their system performance so that they can make informed decisions in managing their irrigation system and their irrigation water use.

For each site, Waterfluence charts how actual irrigation water use compares to a benchmark budget based on site-specific characteristics and real-time weather. Regular water use updates help customers track progress and make informed decisions in managing their irrigation use. Actual water use comes from monthly meter reads conducted for billing purposes. Waterfluence's service includes mapping landscape areas and customers can modify their maps online to improve water budget accuracy and to create controller maps to assist with irrigation operations.

Beyond identifying potential irrigation problems, Waterfluence continually analyzes water use at each site to identify possible leaks, poor scheduling, and ineffective irrigation equipment and recommend solutions. For customers accepting additional help, Waterfluence staff with irrigation expertise conduct on-site landscape field surveys to generate detailed diagnostics. When relevant, they encourage customers to take advantage of City-offered rebates to offset improvement costs.

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 sets authorities and requirements for urban water use efficiency. The legislation sets standards for indoor residential use and requires the State Water Board, in coordination with DWR, to adopt efficiency standards for outdoor residential use, water losses, and CII outdoor landscape areas with dedicated irrigation meters. At the time of preparation of this UWMP, DWR and the State Water Board are in the process of finalizing water loss standards and are in the process of developing new standards for 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 State Water Board. By June 30, 2022, the State Water Board is anticipated to adopt an outdoor residential use standard, a standard for CII outdoor landscape area with dedicated irrigation meters, and performance measures for CII water uses. At that time, the State Water Board 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 State Water Board 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 an 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 COSMUD 2020 UWMP. The Water Shortage Contingency Plan (Chapter 8) is a component of the 2020 UWMP that is adopted, and can be amended, separately from the UWMP. This chapter 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, the COSMUD uses a calendar year for water supply and demand accounting, and therefore this 2020 UWMP includes data through December 2020.

10.2 NOTICE OF PUBLIC HEARING

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

10.2.1 Notices to Cities and Counties

The City provided greater than a 60-day notice regarding the preparation of its 2020 UWMP to cities and counties in its service area as discussed in Section 2.5. The City coordinated the preparation of its UWMP internally within the City, and with San Joaquin County, Cal Water, SEWD, WID, and the Eastern San Joaquin Groundwater Authority. The notices are included as Appendix D. Upon substantial completion of this 2020 UWMP, the City provided the same agencies, including internally within the City and San Joaquin County, with the notice of public hearing (Appendix D).

Notifications to cities and counties in accordance with the UWMP 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 |
|--------------------------------------|---------------|--------------------------|
| <i>Add additional rows as needed</i> | | |
| Stockton | Yes | Yes |
| County Name <i>Drop Down List</i> | 60 Day Notice | Notice of Public Hearing |
| <i>Add additional rows as needed</i> | | |
| San Joaquin County | Yes | Yes |

10.2.2 Notice to the Public

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

A notice of public hearing was issued in accordance with Government Code Section 6066 and was published twice in the Stockton Record newspaper to notify all customers and local governments of the public hearing. In addition, the notice was posted on the City's website, www.stocktongov.com. A copy of the published Notice of Public Hearing is included in Appendix D.

10.3 PUBLIC HEARING AND ADOPTION

The City encouraged community participation in the development of this 2020 UWMP, including its WSCP, using public notices and web-based communication. The notice included 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 COSMUD water users and the general public to become familiar with the 2020 UWMP and ask questions about its water supply, the COSMUD's continuing plans for providing a reliable, safe, high-quality water supply, and the plans to mitigate various potential water shortage conditions. Copies of the draft UWMP were made available for public inspection on the City's website.

10.3.1 Public Hearing

A public hearing was held on June 8, 2021. As part of the public hearing, the COSMUD provided a report on its compliance with the Water Conservation Act of 2009. The report included information on the COSMUD baseline water use, water use targets, compliance, and implementation, as provided in Chapter 5.

10.3.2 Adoption

Subsequent to the public hearing, this 2020 UWMP was adopted by the City Council on June 8, 2021. The City adopted the updated WSCP separately so that it may be updated as necessary. Copies of the adoption resolutions are included in Appendix M.

10.4 PLAN SUBMITTAL

This 2020 UWMP, along with the WSCP, 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 and WSCP will also be submitted to the California State Library.

No later than 30 days after adoption, a copy of the adopted 2020 UWMP, including the Water Shortage Contingency Plan, will be provided to the cities and counties in which the COSMUD provides water.



Appendix A

Urban Water Management Planning Act

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**WATER CODE - WAT****DIVISION 6. CONSERVATION, DEVELOPMENT, AND UTILIZATION OF STATE WATER RESOURCES [10000 - 12999]**

(Heading of Division 6 amended by Stats. 1957, Ch. 1932.)

PART 2.55. SUSTAINABLE WATER USE AND DEMAND REDUCTION [10608 - 10609.42] (Part 2.55 added by Stats.2009, 7th Ex. Sess., Ch. 4, Sec. 1.)**CHAPTER 1. General Declarations and Policy [10608 - 10608.8]** (Chapter 1 added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 1.)**10608.**

The Legislature finds and declares all of the following:

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

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

10608.4

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

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

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



10608.8

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

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

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

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

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

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

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

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

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



WATER CODE - WAT

DIVISION 6. CONSERVATION, DEVELOPMENT, AND UTILIZATION OF STATE WATER RESOURCES [10000 - 12999] (

Heading of Division 6 amended by Stats. 1957, Ch. 1932.)

PART 2.55. SUSTAINABLE WATER USE AND DEMAND REDUCTION [10608 - 10609.42] (*Part 2.55 added by Stats.*

2009, 7th Ex. Sess., Ch. 4, Sec. 1.)

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

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

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

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

(A) Indoor residential use.

(B) Outdoor residential use.

(C) CII water use.

(D) Water losses.

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

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

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

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

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

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

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

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

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

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

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

issues the Legislative Analyst deems appropriate.

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

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

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

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

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

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

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

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

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

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

(1) Outdoor residential water use.

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

(3) A volume for water loss.

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

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

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

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

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

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

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

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

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

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

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

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

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

(B) The standards shall apply to irrigable lands.

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

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

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

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

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

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

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

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

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

(a) Evapotranspiration adjustment factors, as applicable.

(b) Landscape area.

(c) Maximum applied water allowance.

(d) Reference evapotranspiration.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(1) Aggregate estimated efficient indoor residential water use.

(2) Aggregate estimated efficient outdoor residential water use.

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

(4) Aggregate estimated efficient water losses.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(1) Aggregate residential water use.

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

(3) Aggregate water losses.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- (1) The rate at which urban retail water users are complying with the standards, and factors that might facilitate or impede their compliance.
- (2) The accuracy of the data and estimates being used to calculate urban water use objectives.
- (3) Indications of the economic impacts, if any, of the implementation of this chapter on urban water suppliers and urban water users, including CII water users.
- (4) The frequency of use of the bonus incentive, the volume of water associated with the bonus incentive, value to urban water suppliers of the bonus incentive, and any implications of the use of the bonus incentive on water use efficiency.
- (5) The early indications of how implementing this chapter might impact the efficiency of statewide urban water use.
- (6) Recommendations, if any, for improving statewide urban water use efficiency and the standards and practices described in this chapter.
- (7) Any other issues the Legislative Analyst deems appropriate.

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

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

- (a) The rate at which urban retail water suppliers are complying with the standards, and factors that might facilitate or impede their compliance.
- (b) What enforcement actions have been taken, if any.
- (c) The accuracy of the data and estimates being used to calculate urban water use objectives.
- (d) Indications of the economic impacts, if any, of the implementation of this chapter on urban water suppliers and urban water users, including CII water users.
- (e) The frequency of use of the bonus incentive, the volume of water associated with the bonus incentive, value to urban water suppliers of the bonus incentive, and any implications of the use of the bonus incentive on water use efficiency.
- (f) An assessment of how implementing this chapter is affecting the efficiency of statewide urban water use.

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

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

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

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

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

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

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

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

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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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



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

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

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

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

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

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



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

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

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

(Amended by Stats. 2018, Ch. 14, Sec. 24. (SB 606) Effective January 1, 2019.)

- [10621](#) (a) Each urban water supplier shall update its plan at least once every five years on or before July 1, in years ending in six and one, incorporating updated and new information from the five years preceding each update.
- (b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.
- (c) An urban water supplier regulated by the Public Utilities Commission shall include its most recent plan and water shortage contingency plan as part of the supplier's general rate case filings.
- (d) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640)
- (e) Each urban water supplier shall update and submit its 2015 plan to the department by July1, 2016



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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

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



(A) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For basins that a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For a basin that has not been adjudicated, information as to whether the department has identified the basin as a high- or medium-priority basin in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to coordinate with groundwater sustainability agencies or groundwater management agencies listed in subdivision (c) of Section 10723 to maintain or achieve sustainable groundwater conditions in accordance with a groundwater sustainability plan or alternative adopted pursuant to Part 2.74 (commencing with Section 10720).

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

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

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

(d) (I) For an urban retail water supplier, quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, based upon information developed pursuant to subdivision (a), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following:

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.

(G) Sales to other agencies.

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

(I) Agricultural.

(J) Distribution system water loss.

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

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

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

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

(4) (A) Water use projections, where available, shall display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use



plans identified by the urban water supplier, as applicable to the service area.

(B) To the extent that an urban water supplier reports the information described in subparagraph

(A), an urban water supplier shall do both of the following:

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

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

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

(1) (A) For an urban retail water supplier, as defined in Section 10608.12, a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years. The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.

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

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

(i) Water waste prevention ordinances.

(ii) Metering.

(iii) Conservation pricing.

(iv) Public education and outreach.

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

(vi) Water conservation program coordination and staffing support.

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

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

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

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



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

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

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

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

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

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

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

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

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

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

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

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



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

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

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

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

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

(iii) Existing infrastructure capabilities and plausible constraints.

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

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

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

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

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

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

(B) Locally appropriate operational changes.

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

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

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

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

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

(C) Any other relevant communications.

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



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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



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

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

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

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

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

(b) An urban water supplier shall update the seismic risk assessment and mitigation plan when updating its urban water management plan as required by Section 10621.

(c) An urban water supplier may comply with this section by submitting, pursuant to Section 10644, a copy of the most recent adopted local hazard mitigation plan or multihazard mitigation plan under the federal Disaster Mitigation Act of 2000 (Public Law 106-390) if the local hazard mitigation plan or multihazard mitigation plan addresses seismic risk.

(Added by Stats. 2015, Ch. 681, Sec. 1. (SB 664a Effective January 1, 2016.)

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

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

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

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

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

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

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

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



(Amended by Stats. 2009, Ch. 534, Sec. 2. (AB 1465) Effective January 1, 2010.)

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

(Added by Stats. 2001, Ch. 644, Sec. 3. Effective January 1, 2002.)



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

ARTICLE 2.5. Water Service Reliability [10635- 10635.] (Article 2.5 added by Stats. 1995, Ch. 854, Sec. 11.)

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

(b) Every urban water supplier shall include, as part of its urban water management plan, a drought risk assessment for its water service to its customers as part of information considered in developing the demand management measures and water supply projects and programs to be included in the urban water management plan. The urban water supplier may conduct an interim update or updates to this drought risk assessment within the five-year cycle of its urban water management plan update. The drought risk assessment shall include each of the following:

(1) A description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts five consecutive water years, starting from the year following when the assessment is conducted.

(2) A determination of the reliability of each source of supply under a variety of water shortage conditions. This may include a determination that a particular source of water supply is fully reliable under most, if not all, conditions.

(3) A comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.

(4) Considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.

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

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

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

(Amended by Stats. 2018, Ch. 14, Sec. 36. (SB 606) Effective January 1, 2019.)



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

ARTICLE 3. Adoption and Implementation of Plans [1 0640 - 10645] Article 3 added by Stats. 1983, Ch. 1009, Sec. 1.)

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

(b) Every urban water supplier required to prepare a water shortage contingency plan shall prepare a water shortage contingency plan pursuant to Section 10632. The supplier shall likewise periodically review the water shortage contingency plan as required by paragraph (10) of subdivision (a) of Section 10632 and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

(Amended by Stats. 2018, Ch. 14, Sec. 37. (SB 606a Effective January 1, 20J 9.g

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

(Amended by Stats. 2018, Ch. 14, Sec. 38. (SB 606a Effective January 1, 20J 9.g

[10642.](#) Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of both the plan and the water shortage contingency plan. Prior to adopting either, the urban water supplier shall make both the plan and the water shortage contingency plan available for public inspection and shall hold a public hearing or hearings thereon. Prior to any of these hearings, notice of the time and place of the hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of a hearing to any city or county within which the supplier provides water supplies. Notices by a local public agency pursuant to this section shall be provided pursuant to Chapter 17.5 (commencing with Section 7290) of Division 7 of Title 1 of the Government Code. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing or hearings, the plan or water shortage contingency plan shall be adopted as prepared or as modified after the hearing or hearings.

(Amended by Stats. 2018, Ch. 14, Sec. 39. (SB 606\$ Effective January 1, 70J 9.g

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

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

[10644](#) (a) (1) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

(2) The plan, or amendments to the plan, submitted to the department pursuant to paragraph (1)



shall be submitted electronically and shall include any standardized forms, tables, or displays specified by the department.

(b) If an urban water supplier revises its water shortage contingency plan, the supplier shall submit to the department a copy of its water shortage contingency plan prepared pursuant to subdivision (a) of Section 10632 no later than 30 days after adoption, in accordance with protocols for submission and using electronic reporting tools developed by the department.

(c) (1) (A) Notwithstanding Section 10231.5 of the Government Code, the department shall prepare and submit to the Legislature, on or before July 1, in the years ending in seven and two, a report summarizing the status of the plans and water shortage contingency plans adopted pursuant to this part. The report prepared by the department shall identify the exemplary elements of the individual plans and water shortage contingency plans. The department shall provide a copy of the report to each urban water supplier that has submitted its plan and water shortage contingency plan to the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans and water shortage contingency plans submitted pursuant to this part.

(B) The department shall prepare and submit to the board, on or before September 30 of each year, a report summarizing the submitted water supply and demand assessment results along with appropriate reported water shortage conditions and the regional and statewide analysis of water supply conditions developed by the department. As part of the report, the department shall provide a summary and, as appropriate, urban water supplier specific information regarding various shortage response actions implemented as a result of annual supplier-specific water supply and demand assessments performed pursuant to Section 10632.1.

(C) The department shall submit the report to the Legislature for the 2015 plans by July 1, 2017, and the report to the Legislature for the 2020 plans and water shortage contingency plans by July 1, 2022.

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

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

(Amended by Stats. 2018, Ch. 14, Sec. 40. (SB 606) Effective January 1, 2019.)

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

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

(Amended by Stats. 2018, Ch. 14, Sec. 41. (SB 606) Effective January 1, 2019.)



CHAPTER 4. Miscellaneous Provisions [1 0650 - 10657] (*Chapter 4 added by Stats. 1983, Ch. 1009, sec. 1.*)

[10650](#) Any actions or proceedings, other than actions by the board, to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

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

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

(Amended by Stats. 2018, Ch. 14, Sec. 42. (SB 606) Effective January 1, 2019.)

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

(Amended by Stats. 2018, Ch. 14, Sec. 43. (SB 606) Effective January 1, 2019)

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

(Amended by Stats. 1995, Ch. 854, Sec. 6. Effective January 1, 1996.)

[10653](#) The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the board and the Public Utilities Commission, for the preparation of water management plans, water shortage contingency plans, or conservation plans; provided, that if the board or the Public Utilities Commission requires additional information concerning water conservation, drought response measures, or financial conditions to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan that complies with analogous federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

(Amended by Stats. 2018, Ch. 14, Sec. 45. (SB 606) Effective January 1, 2019)

[10654](#) An urban water supplier may recover in its rates the costs incurred in preparing its urban water management plan, its drought risk assessment, its water supply and demand assessment, and its water shortage contingency plan and implementing the reasonable water conservation measures included in either of the plans.

(Amended by Stats. 2018, Ch. 14, Sec. 44. (SB 606) Effective January 1, 2019)

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



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

[10656](#) An urban water supplier is not eligible for a water grant or loan awarded or administered by the state unless the urban water supplier complies with this part.

(Amended by Stats. 2018, Ch. 14, Sec. 46. (SB 606) Effective January 1, 2019)

[10657](#) The department may adopt regulations regarding the definitions of water, water use, and reporting periods, and may adopt any other regulations deemed necessary or desirable to implement this part. In developing regulations pursuant to this section, the department shall solicit broad public participation from stakeholders and other interested persons.

(Amended by Stats. 2018, Ch. 14, Sec. 47. (SB 606) Effective January 1, 2019)

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Appendix B

DWR 2020 Urban Water Management Plan Tables

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| Submittal Table 2-1 Retail Only: Public Water Systems | | | |
|---|--------------------------|--------------------------------------|---------------------------------|
| Public Water System Number | Public Water System Name | Number of Municipal Connections 2020 | Volume of Water Supplied 2020 * |
| <i>Add additional rows as needed</i> | | | |
| CA3910012 | City of Stockton | 49,573 | 34,404 |
| TOTAL | | 49,573 | 34,404 |
| * Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | |
| NOTES: Volume of water supplied is in acre-feet (AF). | | | |

| Submittal Table 2-2: Plan Identification | | |
|--|---|--|
| Select Only One | Type of Plan | Name of RUWMP or Regional Alliance <i>if applicable</i> (select from drop down list) |
| <input checked="" type="checkbox"/> | Individual UWMP | |
| | <input type="checkbox"/> Water Supplier is also a member of a RUWMP | |
| | <input type="checkbox"/> Water Supplier is also a member of a Regional Alliance | |
| <input type="checkbox"/> | Regional Urban Water Management Plan (RUWMP) | |
| NOTES: | | |

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

| Submittal Table 2-4 Retail: Water Supplier Information Exchange |
|--|
| The retail Supplier has informed the following wholesale supplier(s) of projected water use in accordance with Water Code Section 10631. |
| Wholesale Water Supplier Name |
| <i>Add additional rows as needed</i> |
| Stockton East Water District |
| NOTES: |

Submittal Table 3-1 Retail: Population - Current and Projected

| Population Served | 2020 | 2025 | 2030 | 2035 | 2040 | 2045(opt) |
|-------------------|---------|---------|---------|---------|---------|-----------|
| | 184,402 | 188,601 | 192,800 | 239,380 | 285,960 | 307,150 |

NOTES: The 2020 population is based on the DWR Population Tool, using the allowed modification of using the 2010 Persons per Connection to estimate the 2020 population. The annualized growth rate of 1.44 percent was used to estimate the 2045 projected population since 2045 is outside the planning horizon of the City's 2040 GPU and the 2020 Water Master Plan Update.

| Submittal Table 4-1 Retail: Demands for Potable and Non-Potable Water - Actual | | | |
|--|--|--|---------|
| Use Type | 2020 Actual | | |
| Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool | Additional Description (as needed) | Level of Treatment When Delivered Drop down list | Volume* |
| Add additional rows as needed | | | |
| Single Family | | Drinking Water | 15,758 |
| Multi-Family | | Drinking Water | 3,030 |
| Commercial | Includes Institutional/Governmental Use Type | Drinking Water | 4,700 |
| Industrial | | Drinking Water | 533 |
| Industrial | Walnut Plant Area | Drinking Water | 176 |
| Landscape | | Drinking Water | 3,255 |
| Sales/Transfers/Exchanges to other agencies | SEWD water delivered to two San Joaquin County water systems | Drinking Water | 1,830 |
| Other Potable | Hydrant Meters and Jumpers | Drinking Water | 132 |
| Losses | Within water distribution system | Drinking Water | 4,991 |
| TOTAL | | | 34,404 |
| * Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | |
| NOTES: Units are in acre-feet (AF). | | | |

| Submittal Table 4-2 Retail: Use for Potable and Non-Potable Water - Projected | | | | | | |
|--|--|---|--------|--------|--------|---------------|
| Use Type | Additional Description (as needed) | Projected Water Use* | | | | |
| <u>Drop down list</u> May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool | | Report To the Extent that Records are Available | | | | |
| | | 2025 | 2030 | 2035 | 2040 | 2045 (opt) |
| Add additional rows as needed | | | | | | |
| Single Family | | 15,782 | 16,066 | 19,259 | 22,451 | 22,451 |
| Multi-Family | | 2,927 | 2,976 | 3,494 | 4,012 | 4,012 |
| Commercial | Includes Institutional/Governmental Use Type | 4,793 | 4,856 | 5,149 | 5,442 | 5,442 |
| Industrial | | 3,192 | 5,592 | 5,871 | 6,150 | 6,150 |
| Industrial | Walnut Plant Area | 205 | 205 | 205 | 205 | 205 |
| Landscape | | 3,162 | 3,208 | 3,786 | 4,363 | 4,363 |
| Sales/Transfers/Exchanges to other Suppliers | SEWD water delivered to two San Joaquin County water systems | 1,830 | 1,830 | 1,830 | 1,830 | 1,830 |
| Losses | Within water distribution system | 2,898 | 3,145 | 3,568 | 3,991 | 3,991 |
| TOTAL | | 34,789 | 37,878 | 43,161 | 48,444 | 48,444 |
| * Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | | | | |
| NOTES: Units are in acre-feet (AF). Assumed that SEWD water deliveries to San Joaquin County "islands" and the COSMUD Walnut Plant Area will remain constant for projected water use. The projected water use for the Walnut Plant Area is estimated as the 5-year average of SEWD water delivery from 2015 to 2019 to the Walnut Plant Area. | | | | | | |

| Submittal Table 4-3 Retail: Total Water Use (Potable and Non-Potable) | | | | | | |
|--|--------|--------|--------|--------|--------|------------|
| | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 (opt) |
| Potable Water, Raw, Other Non-potable <i>From Tables 4-1R and 4-2 R</i> | 34,404 | 34,789 | 37,878 | 43,161 | 48,444 | 48,444 |
| Recycled Water Demand ¹ <i>From Table 6-4</i> | 0 | 0 | 0 | 0 | 0 | 0 |
| Optional Deduction of Recycled Water Put Into Long-Term Storage ² | | | | | | |
| TOTAL WATER USE | 34,404 | 34,789 | 37,878 | 43,161 | 48,444 | 48,444 |

¹ Recycled water demand fields will be blank until Table 6-4 is complete

² Long term storage means water placed into groundwater or surface storage that is not removed from storage in the same year. Supplier **may** deduct recycled water placed in long-term storage from their reported demand. This value is manually entered into Table 4-3.

NOTES: Units are in acre-feet (AF).

The City does not use recycled water for beneficial use within its service area.

Submittal Table 4-4 Retail: Last Five Years of Water Loss Audit Reporting

| Reporting Period Start Date (mm/yyyy) | Volume of Water Loss ^{1,2} |
|--|-------------------------------------|
| 01/2015 | 1,703 |
| 01/2016 | 2,609 |
| 01/2017 | 2,320 |
| 01/2018 | 2,847 |
| 01/2019 | 2,994 |

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: Units are in acre-feet (AF).

Submittal Table 4-5 Retail Only: Inclusion in Water Use Projections

| | |
|---|--|
| Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) <i>Drop down list (y/n)</i> | Yes |
| 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. | California Code of Regulations, Title 23 Waters, Division 2 DWR, Chapter 2.7 Model Water Efficient Landscape Ordinance (MWELO), updated 2015. ^(a) |
| Are Lower Income Residential Demands Included In Projections? <i>Drop down list (y/n)</i> | Yes |

NOTES:

(a) MWELO applies only to irrigation demand projections.

**Submittal Table 5-1 Baselines and Targets Summary
From SB X7-7 Verification Form**

Retail Supplier or Regional Alliance Only

| Baseline Period | Start Year * | End Year * | Average Baseline GPCD* | Confirmed 2020 Target* |
|-----------------|--------------|------------|------------------------|------------------------|
| 10-15 year | 1998 | 2007 | 178 | 165 |
| 5 Year | 2005 | 2009 | 179 | |

**All cells in this table should be populated manually from the supplier's SBX7-7 Verification Form and reported in Gallons per Capita per Day (GPCD)*

NOTES: Refer to Table 4-1 or Appendix F SB X7-7 Verification Form in the 2015 UWMP.

Submittal Table 5-2: 2020 Compliance**From SB X7-7 2020 Compliance Form***Retail Supplier or Regional Alliance Only*

| 2020 GPCD | | | 2020 Confirmed Target GPCD* | Did Supplier Achieve Targeted Reduction for 2020? Y/N |
|----------------------|----------------------------|---|-----------------------------------|---|
| Actual 2020 GPCD* | 2020 TOTAL Adjustments* | Adjusted 2020 GPCD* <i>(Adjusted if applicable)</i> | | |
| 158 | 0 | 0 | 165 | YES |

**All cells in this table should be populated manually from the supplier's SBX7-7 2020 Compliance Form and reported in Gallons per Capita per Day (GPCD)*

NOTES: Refer to Appendix F SB X7-7 2020 Compliance Form.

| Submittal Table 6-1 Retail: Groundwater Volume Pumped | | | | | | |
|---|--|-------|-------|-------|-------|-------|
| <input type="checkbox"/> | Supplier does not pump groundwater. The supplier will not complete the table below. | | | | | |
| <input type="checkbox"/> | All or part of the groundwater described below is desalinated. | | | | | |
| Groundwater Type <i>Drop Down List</i> <i>May use each category multiple times</i> | Location or Basin Name | 2016* | 2017* | 2018* | 2019* | 2020* |
| <i>Add additional rows as needed</i> | | | | | | |
| Alluvial Basin | San Joaquin Valley Basin, Eastern San Joaquin Subbasin | 3748 | 2965 | 3236 | 3778 | 8661 |
| TOTAL | | 3,748 | 2,965 | 3,236 | 3,778 | 8,661 |
| * Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | | | | |
| NOTES: Units are in acre-feet (AF). | | | | | | |

| Submittal Table 6-2 Retail: Wastewater Collected Within Service Area in 2020 | | | | | | |
|---|--|--|--|---|--|--|
| <input type="checkbox"/> | | There is no wastewater collection system. The supplier will not complete the table below. | | | | |
| | | Percentage of 2015 service area covered by wastewater collection system <i>(optional)</i> | | | | |
| | | Percentage of 2015 service area population covered by wastewater collection system <i>(optional)</i> | | | | |
| Wastewater Collection | | | Recipient of Collected Wastewater | | | |
| Name of Wastewater Collection Agency | Wastewater Volume Metered or Estimated? <i>Drop Down List</i> | Volume of Wastewater Collected from UWMP Service Area 2020 * | Name of Wastewater Treatment Agency Receiving Collected Wastewater | Treatment Plant Name | Is WWTP Located Within UWMP Area? <i>Drop Down List</i> | Is WWTP Operation Contracted to a Third Party? <i>(optional)</i> <i>Drop Down List</i> |
| COSMUD | Metered | 30,915 | City of Stockton | Stockton Regional Wastewater Control Facility | Yes | No |
| Total Wastewater Collected from Service Area in 2020: | | 30,915 | | | | |
| * Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3 . | | | | | | |
| NOTES: Units are in acre-feet (AF). The wastewater volume collected includes wastewater collected from the COSMUD, Cal Water, and San Joaquin County water service areas. | | | | | | |

Submittal Table 6-5 Retail: 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual



Recycled water was not used in 2015 nor projected for use in 2020.
The supplier will not complete the table below. If recycled water was not used in 2020, and was not predicted to be in 2015, then check the box and do not complete the table.

| Beneficial Use Type | 2015 Projection for 2020 ¹ | 2020 Actual Use ¹ |
|--|---------------------------------------|------------------------------|
| <i>Insert additional rows as needed.</i> | | |
| Agricultural irrigation | - | - |
| Landscape irrigation (exc golf courses) | - | - |
| 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) | - | - |
| Total | 0 | 0 |

¹ Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

NOTE: The City does not plan to use recycled water for beneficial use within its service area.

| Submittal Table 6-6 Retail: Methods to Expand Future Recycled Water Use | | | |
|---|---|-----------------------------|---|
| <input checked="" type="checkbox"/> | Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation. | | |
| | Provide page location of narrative in UWMP | | |
| Name of Action | Description | Planned Implementation Year | Expected Increase in Recycled Water Use * |
| <i>Add additional rows as needed</i> | | | |
| Total | | | 0 |
| <i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i> | | | |
| NOTES: The City does not plan to use recycled water for beneficial use within its service area. | | | |

| Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs | | | | | | |
|---|---|------------------------------|--|-----------------------------|---|--|
| <input type="checkbox"/> | No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below. | | | | | |
| <input type="checkbox"/> | Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format. | | | | | |
| 6-20 | Provide page location of narrative in the UWMP | | | | | |
| Name of Future Projects or Programs | Joint Project with other suppliers? | | Description (if needed) | Planned Implementation Year | Planned for Use in Year Type <i>Drop Down List</i> | Expected Increase in Water Supply to Supplier* <i>This may be a range</i> |
| | <i>Drop Down List (y/n)</i> | <i>If Yes, Supplier Name</i> | | | | |
| <i>Add additional rows as needed</i> | | | | | | |
| North Stockton Pipeline Hypochlorite Facility Project ^(a) | Yes | SEWD | Construct new sodium hypochlorite injection system to combine supply from the DWTP and SEWD | 2021 | All Year Types | - |
| Increase WID Supply ^(b) | Yes | WID | Per contract, WID would supply the City with an additional 3.0 AFY per acre the City annexed | 2030 | All Year Types | 6,500 AFY |
| Advanced Metering Infrastructure ^(c) | No | - | Provide greater efficiency and reduce costs for meter reading and allow customers to better track and manage their water use | 2025 - 2028 | All Year Types | - |
| *Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. NOTES: Units are in acre-feet (AF). (a) The project will increase supply reliability by allowing North Stockton to be supplied by the DWTP and SEWD without formation of undesirable disinfection byproducts due to different potable water treatment processes. (b) WID supply may increase by an additional 6,500 AFY as agricultural lands north of the City are annexed to the City. (c) AMI will provide customers with the ability to access and better manage their water use. | | | | | | |

| Submittal Table 6-8 Retail: Water Supplies — Actual | | | | |
|---|-----------------------------------|----------------|------------------------------|---------------------------------------|
| Water Supply | Additional Detail on Water Supply | 2020 | | |
| Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool | | Actual Volume* | Water Quality Drop Down List | Total Right or Safe Yield* (optional) |
| Add additional rows as needed | | | | |
| Purchased or Imported Water | SEWD | 6,939 | Drinking Water | |
| Purchased or Imported Water | WID | 8,657 | Drinking Water | |
| Surface water (not desalinated) | San Joaquin River Diversion | 9,970 | Drinking Water | |
| Groundwater (not desalinated) | City-owned wells | 8,662 | Drinking Water | |
| Total | | 34,228 | | 0 |
| *Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | | |
| NOTES: Units are in acre-feet (AF). | | | | |

Table O-1B: Recommended Energy Reporting - Total Utility Approach

| | | | | |
|---|--------------------------|--|------------------------------|-------------|
| 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? | <input type="checkbox"/> | 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) | | 34,228 | 0 | 34,228 |
| Energy Consumed (kWh) | | 11,280,428 | 0 | 11,280,428 |
| Energy Intensity (kWh/volume) | | 329.6 | 0.0 | 329.6 |
| Quantity of Self-Generated Renewable Energy | | | | |
| 117,926 kWh | | | | |
| Data Quality (Estimate, Metered Data, Combination of Estimates and Metered Data) | | | | |
| Metered Data | | | | |
| Data Quality Narrative: | | | | |
| Monthly electrical energy data was provided for groundwater wells, reservoir pump stations, and water treatment at the DWTP. | | | | |
| Narrative: | | | | |
| The COSMUD water service area is supplied by surface water from the San Joaquin River, purchased water from SEWD and WID, and groundwater from City-owned wells. Refer to Section 6.2 for an in-depth explanation of each water supply source. The energy data provided summarized the monthly energy consumption for operating the DWTP, groundwater wells, and reservoir usage. Some solar power is produced at the DWTP. | | | | |

| Submittal Table 7-1 Retail: Basis of Water Year Data for SEWD Water Supply (Reliability) | | | |
|--|--|---|---|
| Year Type | Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020 | Available Supplies if Year Type Repeats | |
| | | <input type="checkbox"/> | Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____ |
| | | <input checked="" type="checkbox"/> | Quantification of available supplies is provided in this table as either volume only, percent only, or both. |
| | | Volume Available * | % of Average Supply |
| Normal Year | 2018 | 24,300 | 100% |
| Single-Dry Year | 2015 | 6,700 | 28% |
| Consecutive Dry Years 1st Year | 2013 | 24,300 | 100% |
| Consecutive Dry Years 2nd Year | 2014 | 15,500 | 64% |
| Consecutive Dry Years 3rd Year | 2015 | 6,700 | 28% |
| Consecutive Dry Years 4th Year | 2016 | 6,700 | 28% |
| Consecutive Dry Years 5th Year | 2017 | 24,300 | 100% |
| <p><i>Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.</i></p> | | | |
| <p>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</p> | | | |
| <p>NOTES: Units are in acre-feet (AF).</p> | | | |

Submittal Table 7-1 Retail: Basis of Water Year Data for San Joaquin River Water Supply (Reliability Assessment)

| Year Type | Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020 | Available Supplies if Year Type Repeats | |
|--------------------------------|--|---|---|
| | | <input type="checkbox"/> | Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____ |
| | | <input checked="" type="checkbox"/> | Quantification of available supplies is provided in this table as either volume only, percent only, or both. |
| | | Volume Available * | % of Average Supply |
| Normal Year | 2018 | 20,500 | 100% |
| Single-Dry Year | 2015 | 19,100 | 93% |
| Consecutive Dry Years 1st Year | 2013 | 18,300 | 89% |
| Consecutive Dry Years 2nd Year | 2014 | 19,000 | 93% |
| Consecutive Dry Years 3rd Year | 2015 | 19,100 | 93% |
| Consecutive Dry Years 4th Year | 2016 | 18,100 | 88% |
| Consecutive Dry Years 5th Year | 2017 | 21,400 | 104% |

Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.

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

NOTES: Units are in acre-feet (AF).
Volume available is based on the City's Water Right Permit 21176 Petition for Extension of Time Table 2.

Submittal Table 7-1 Retail: Basis of Water Year Data for WID Supply (Reliability Assessment)

| Year Type | Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020 | Available Supplies if Year Type Repeats | |
|--------------------------------|--|---|---|
| | | <input type="checkbox"/> | Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____ |
| | | <input checked="" type="checkbox"/> | Quantification of available supplies is provided in this table as either volume only, percent only, or both. |
| | | Volume Available * | % of Average Supply |
| Normal Year | 2018 | 6,500 | 100% |
| Single-Dry Year | 2015 | 4,500 | 69% |
| Consecutive Dry Years 1st Year | 2013 | 6,500 | 100% |
| Consecutive Dry Years 2nd Year | 2014 | 6,500 | 100% |
| Consecutive Dry Years 3rd Year | 2015 | 4,500 | 69% |
| Consecutive Dry Years 4th Year | 2016 | 4,500 | 69% |
| Consecutive Dry Years 5th Year | 2017 | 6,500 | 100% |

Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.

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

NOTES: Units are in acre-feet (AF).

| Submittal Table 7-1 Retail: Basis of Water Year Data for Groundwater Supply (Reliability) | | | |
|--|--|---|---|
| Year Type | Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020 | Available Supplies if Year Type Repeats | |
| | | <input type="checkbox"/> | Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____ |
| | | <input checked="" type="checkbox"/> | Quantification of available supplies is provided in this table as either volume only, percent only, or both. |
| | | Volume Available * | % of Average Supply |
| Normal Year | 2018 | 23,100 | 100% |
| Single-Dry Year | 2015 | 23,100 | 100% |
| Consecutive Dry Years 1st Year | 2013 | 23,100 | 100% |
| Consecutive Dry Years 2nd Year | 2014 | 23,100 | 100% |
| Consecutive Dry Years 3rd Year | 2015 | 23,100 | 100% |
| Consecutive Dry Years 4th Year | 2016 | 23,100 | 100% |
| Consecutive Dry Years 5th Year | 2017 | 23,100 | 100% |
| <p><i>Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.</i></p> | | | |
| <p>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</p> | | | |
| <p>NOTES: Units are in acre-feet (AF). Available groundwater supply is based on the projected groundwater supply that is reasonably available. COSMUD assumes that the reasonably available groundwater for the current water service area (approximately 38,500 acres) is pumped at 0.6 ac-ft/acre/yr, equivalent to an annual groundwater supply of 23,100 ac-ft/yr.</p> | | | |

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

| | 2025 | 2030 | 2035 | 2040 | 2045 (<i>Opt</i>) |
|---|--------|--------|--------|--------|---------------------|
| Supply totals (<i>autofill from DWR Table 6-9</i>) | 77,300 | 85,200 | 85,400 | 85,400 | 85,400 |
| <i>SEWD</i> | 24,300 | 24,300 | 24,300 | 24,300 | 24,300 |
| <i>WID</i> | 6,500 | 13,000 | 13,000 | 13,000 | 13,000 |
| <i>San Joaquin River</i> | 23,400 | 24,800 | 25,000 | 25,000 | 25,000 |
| <i>Groundwater Wells</i> | 23,100 | 23,100 | 23,100 | 23,100 | 23,100 |
| Demand totals (<i>autofill from DWR Table 4-3</i>) | 34,789 | 37,878 | 43,161 | 48,444 | 48,444 |
| Difference | 42,511 | 47,322 | 42,239 | 36,956 | 36,956 |

NOTES: Units are in AF (acre-feet).

| Submittal Table 7-3 Retail: Single Dry Year Supply and Demand Comparison | | | | | |
|--|--------|--------|--------|--------|------------|
| | 2025 | 2030 | 2035 | 2040 | 2045 (Opt) |
| Supply totals* | 56,100 | 61,900 | 62,100 | 62,100 | 62,100 |
| SEWD | 6,700 | 6,700 | 6,700 | 6,700 | 6,700 |
| WID | 4,500 | 9,000 | 9,000 | 9,000 | 9,000 |
| San Joaquin River | 21,800 | 23,100 | 23,300 | 23,300 | 23,300 |
| Groundwater Wells | 23,100 | 23,100 | 23,100 | 23,100 | 23,100 |
| Demand totals* | 34,789 | 37,878 | 43,161 | 48,444 | 48,444 |
| Difference | 21,311 | 24,022 | 18,939 | 13,656 | 13,656 |
| *Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3. | | | | | |
| NOTES: Units are in acre-feet (AF). | | | | | |

Submittal Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)

| 2021 | Total |
|---|--------------|
| Total Water Use | 34,481 |
| Total Supplies | 74,400 |
| Surplus/Shortfall w/o WSCP Action | 39,919 |
| Planned WSCP Actions (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 39,919 |
| Resulting % Use Reduction from WSCP action | 0% |
| | |
| 2022 | Total |
| Total Water Use | 34,558 |
| Total Supplies | 64,800 |
| Surplus/Shortfall w/o WSCP Action | 30,242 |
| Planned WSCP Actions (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 30,242 |
| Resulting % Use Reduction from WSCP action | 0% |
| | |
| 2023 | Total |
| Total Water Use | 34,635 |
| Total Supplies | 54,800 |
| Surplus/Shortfall w/o WSCP Action | 20,165 |
| Planned WSCP Actions (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 20,165 |
| Resulting % Use Reduction from WSCP action | 0% |
| | |
| 2024 | Total |
| Total Water Use | 34,712 |
| Total Supplies | 54,300 |
| Surplus/Shortfall w/o WSCP Action | 19,588 |
| Planned WSCP Actions (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 19,588 |
| Resulting % Use Reduction from WSCP action | 0% |
| | |
| 2025 | Total |
| Total Water Use | 34,789 |
| Total Supplies | 77,300 |
| Surplus/Shortfall w/o WSCP Action | 42,511 |
| Planned WSCP Actions (use reduction and supply augmentation) | |
| WSCP - supply augmentation benefit | |
| WSCP - use reduction savings benefit | |
| Revised Surplus/(shortfall) | 42,511 |
| Resulting % Use Reduction from WSCP action | 0% |

Submittal Table 8-1**Water Shortage Contingency Plan Levels**

| Shortage Level (Stages) | Percent Shortage Range | Shortage Response Actions (<i>Narrative description</i>) |
|------------------------------------|-------------------------------|---|
| 1 | Up to 10% | Mandatory Water Conservation per SMC Chapter 13.28 |
| 2 | Up to 20% | Water Shortage Emergency per SMC Chapter 13.32 |
| 3 | Up to 30% | Water Shortage Emergency per SMC Chapter 13.32 |
| 4 | Up to 40% | Water Shortage Emergency per SMC Chapter 13.32 |
| 5 | Up to 50% | Water Shortage Emergency per SMC Chapter 13.32 |
| 6 | More than 50% | Water Shortage Emergency per SMC Chapter 13.32* |

NOTES: *Proposed revisions to SMC 13.32.060 will address water shortage conditions greater than 50 percent.

Submittal Table 8-2: Demand Reduction Actions

| Shortage Level (Stages) | Demand Reduction Actions Drop down list <i>These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.</i> | How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i> | Additional Explanation or Reference <i>(optional)</i> | Penalty, Charge, or Other Enforcement? <i>For Retail Suppliers Only</i> Drop Down List |
|-------------------------|--|---|--|--|
| 1 | Expand Public Information Campaign | Studies have shown that a targeted public information campaign during a drought can reduce water use by 7 - 8% | City to encourage water customers and users to implement best water management and conservation practices listed in Stage 2. | No |
| 1 | Other - Prohibit use of potable water for washing hard surfaces | Boosts other methods - not readily quantifiable | | Yes |
| 1 | Water Features - Restrict water use for decorative water features, such as fountains | Boosts other methods as a public display of drought conservation, difficult to quantify | Recirculation of water only. | Yes |
| 1 | Decrease Line Flushing | Depends on extent and frequency of current flushing activities | | No |
| 1 | Landscape - Limit landscape irrigation to specific times | Depends on times that irrigation will be allowed, but can reduce water use by 20-25 gallons per day per household | | Yes |
| 1 | Implement or Modify Drought Rate Structure or Surcharge | Generally, the cost of water does not significantly effect water use. The cost increase needs to be significant to result in water use reduction. | Municipal Code: 13.32.060 - Up to 10% Reduction in residential use | Yes |
| 1 | Increase Water Waste Patrols | Boosts the effectiveness of implemented restrictions, especially those related to landscape water use | Water Field Office - Additional staff/temporary staff | Yes |
| 1 | Landscape - Restrict or prohibit runoff from landscape irrigation | Many suppliers already prohibit runoff at all times | | Yes |
| 1 | Landscape - Prohibit certain types of landscape irrigation | Boosts the effectiveness of other methods - not readily quantifiable | | Yes |
| 1 | Other - Customers must repair leaks, breaks, and malfunctions in a timely manner | Boosts the effectiveness of other methods - not readily quantifiable | | Yes |
| 1 | Other - Require automatic shut of hoses | Many suppliers already prohibit unrestricted hose use | | Yes |
| 1 | Reduce System Water Loss | Depends on extent and magnitude of current system losses, but could reduce system loss by up to 25 - 35% | | Yes |
| 1 | Other - Prohibit use of potable water for construction and dust control | 3,000 gal/acre/day for construction areas | Use of potable water for dust control purposes except for public health or safety purposes. Reclaimed, recycled or other nonpotable water may be used for such purposes so long as such water is not wasted. | Yes |

| | | | | |
|--|---|---|---------------------------------|-----|
| 1 | Other - Prohibit vehicle washing except at facilities using recycled or recirculating water | 100-200 gal/year/residential connection | For car washes | Yes |
| 1 | CII - Restaurants may only serve water upon request | 50 gal/day/commercial connection | | Yes |
| 1 | CII - Lodging establishment must offer opt out of linen service | 250-500 gal/day/hotel | | Yes |
| 1 | Other water feature or swimming pool restriction | N/A | Refer to SMC Section 13.32.060. | Yes |
| 2 | Other | N/A | Refer to SMC Section 13.32.060. | Yes |
| 3 | Other | N/A | Refer to SMC Section 13.32.060. | Yes |
| 4 | Other | N/A | Refer to SMC Section 13.32.060. | Yes |
| 5 | Other | N/A | Refer to SMC Section 13.32.060. | Yes |
| 6 | Other | N/A | Refer to SMC Section 13.32.060. | Yes |
| NOTES: Stage 1 demand reduction actions are mandatory in conformance with SMC §13.28.030. Mandatory conservation is required from May 1 to November 1. | | | | |

| Submittal Table 8-3: Supply Augmentation and Other Actions | | | |
|--|--|---|--|
| Shortage Level (Stages) | Supply Augmentation Methods and Other Actions by Water Supplier <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool</i> | How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i> | Additional Explanation or Reference <i>(optional)</i> |
| 4 | Exchanges | Up to shortage gap | Potentially with neighboring agencies, such as an irrigation district |
| 4 | Transfers | Up to shortage gap | Potentially from WID |
| 5 | Exchanges | Up to shortage gap | Potentially with neighboring agencies, such as an irrigation district |
| 5 | Transfers | Up to shortage gap | Potentially from WID |
| 6 | Exchanges | Up to shortage gap | Potentially with neighboring agencies, such as an irrigation district |
| 6 | Transfers | Up to shortage gap | Potentially from WID |
| NOTES: | | | |

| Submittal Table 10-1 Retail: Notification to Cities and Counties | | |
|--|---------------|--------------------------|
| City Name | 60 Day Notice | Notice of Public Hearing |
| <i>Add additional rows as needed</i> | | |
| Stockton | Yes | Yes |
| County Name <i>Drop Down List</i> | 60 Day Notice | Notice of Public Hearing |
| <i>Add additional rows as needed</i> | | |
| San Joaquin County | Yes | Yes |
| NOTES: | | |

DWR 2020 Urban Water Management Plan Checklist

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Appendix C

2020 UWMP Checklist



| Retail | 2020 Guidebook Location | Water Code Section | Summary as Applies to UWMP | Subject | 2020 UWMP Location (For Agency Review Use) |
|--------|--------------------------|--------------------|--|--|--|
| X | Chapter 1 | 10615 | A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. | Introduction and Overview | Executive Summary |
| X | Chapter 1 | 10630.5 | Each plan shall include a simple description of the supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a supplier may also choose to include a simple description at the beginning of each chapter. | Summary | Executive Summary |
| X | Section 2.2 | 10620(b) | Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier. | Plan Preparation | Section 2.1 |
| X | Section 2.6 | 10620(d)(2) | Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable. | Plan Preparation | Section 2.5 |
| X | Section 2.6.2 | 10642 | Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan. | Plan Preparation | Section 2.5.2.2 |
| X | Section 2.6, Section 6.1 | 10631(h) | Retail suppliers will include documentation that they have provided their wholesale supplier(s) - if any - with water use projections from that source. | System Supplies | Section 2.5.1 |
| | Section 2.6 | 10631(h) | Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types. | System Supplies | N/A |
| X | Section 3.1 | 10631(a) | Describe the water supplier service area. | System Description | Section 3.2 |
| X | Section 3.3 | 10631(a) | Describe the climate of the service area of the supplier. | System Description | Section 3.3 |
| X | Section 3.4 | 10631(a) | Provide population projections for 2025, 2030, 2035, 2040 and optionally 2045. | System Description | Section 3.6.1 |
| X | Section 3.4.2 | 10631(a) | Describe other social, economic, and demographic factors affecting the supplier's water management planning. | System Description | Section 3.6.2 |
| X | Sections 3.4 and 5.4 | 10631(a) | Indicate the current population of the service area. | System Description and Baselines and Targets | Section 3.6.1 |
| X | Section 3.5 | 10631(a) | Describe the land uses within the service area. | System Description | Section 3.7 |
| X | Section 4.2 | 10631(d)(1) | Quantify past, current, and projected water use, identifying the uses among water use sectors. | System Water Use | Section 4.2 |
| X | Section 4.2.4 | 10631(d)(3)(C) | Retail suppliers shall provide data to show the distribution loss standards were met. | System Water Use | Section 4.4 |
| X | Section 4.2.6 | 10631(d)(4)(A) | In projected water use, include estimates of water savings from adopted codes, plans, and other policies or laws. | System Water Use | Section 4.2.3 |
| X | Section 4.2.6 | 10631(d)(4)(B) | Provide citations of codes, standards, ordinances, or plans used to make water use projections. | System Water Use | Section 4.2.3 and Table 4-7 |

Appendix C

2020 UWMP Checklist



| Retail | 2020 Guidebook Location | Water Code Section | Summary as Applies to UWMP | Subject | 2020 UWMP Location (For Agency Review Use) |
|--------|----------------------------|--------------------|---|-----------------------|--|
| X | Section 4.3.2.4 | 10631(d)(3)(A) | Report the distribution system water loss for each of the 5 years preceding the plan update. | System Water Use | Section 4.4 |
| X | Section 4.4 | 10631.1(a) | Include projected water use needed for lower income housing projected in the service area of the supplier. | System Water Use | Section 4.5 Table 4-7 |
| X | Section 4.5 | 10635(b) | Demands under climate change considerations must be included as part of the drought risk assessment. | System Water Use | Section 4.6 |
| X | Chapter 5 | 10608.20(e) | Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data. | Baselines and Targets | Sections 5.5, 5.6 and Table 5-3 |
| X | Chapter 5 | 10608.24(a) | Retail suppliers shall meet their water use target by December 31, 2020. | Baselines and Targets | Section 5.6 |
| | Section 5.1 | 10608.36 | Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions. | Baselines and Targets | N/A |
| X | Section 5.2 | 10608.24(d)(2) | If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment. | Baselines and Targets | N/A |
| X | Section 5.5 | 10608.22 | Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5-year baseline. This does not apply if the suppliers base GPCD is at or below 100. | Baselines and Targets | Section 5.6 |
| X | Section 5.5 and Appendix E | 10608.4 | Retail suppliers shall report on their compliance in meeting their water use targets. The data shall be reported using a standardized form in the SBX7-7 2020 Compliance Form. | Baselines and Targets | Appendix F |
| X | Sections 6.1 and 6.2 | 10631(b)(1) | Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought. | System Supplies | Section 6.1 and 7.1 |
| X | Sections 6.1 | 10631(b)(1) | Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, <i>including changes in supply due to climate change</i> . | System Supplies | Sections 6.1, 6.7, and 7.1 |
| X | Section 6.1 | 10631(b)(2) | When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies. | System Supplies | Section 6.2 |
| X | Section 6.1.1 | 10631(b)(3) | Describe measures taken to acquire and develop planned sources of water. | System Supplies | Section 6.5 and 6.6 |
| X | Section 6.2.8 | 10631(b) | Identify and quantify the existing and planned sources of water available for 2020, 2025, 2030, 2035, 2040 and optionally 2045. | System Supplies | Section 6.6 |
| X | Section 6.2 | 10631(b) | Indicate whether groundwater is an existing or planned source of water available to the supplier. | System Supplies | Section 6.2.2 |

Appendix C

2020 UWMP Checklist



| Retail | 2020 Guidebook Location | Water Code Section | Summary as Applies to UWMP | Subject | 2020 UWMP Location (For Agency Review Use) |
|--------|-------------------------|--------------------|---|----------------------------------|--|
| X | Section 6.2.2 | 10631(b)(4)(A) | Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization. | System Supplies | Section 6.2.2.1 (website link provided due to document size) |
| X | Section 6.2.2 | 10631(b)(4)(B) | Describe the groundwater basin. | System Supplies | Section 6.2.2.1 |
| X | Section 6.2.2 | 10631(b)(4)(B) | Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump. | System Supplies | Section 6.2.2 |
| X | Section 6.2.2.1 | 10631(b)(4)(B) | For unadjudicated basins, indicate whether or not the department has identified the basin as a high or medium priority. Describe efforts by the supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions. | System Supplies | Section 6.2.2.1 |
| X | Section 6.2.2.4 | 10631(b)(4)(C) | Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years | System Supplies | Section 6.2.2.2 |
| X | Section 6.2.2 | 10631(b)(4)(D) | Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped. | System Supplies | Section 6.2.2.3 |
| X | Section 6.2.7 | 10631(c) | Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis. | System Supplies | Section 6.4 |
| X | Section 6.2.5 | 10633(b) | Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project. | System Supplies (Recycled Water) | Section 6.2.5.2.1 |
| X | Section 6.2.5 | 10633(c) | Describe the recycled water currently being used in the supplier's service area. | System Supplies (Recycled Water) | Section 6.2.5.4 |
| X | Section 6.2.5 | 10633(d) | Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses. | System Supplies (Recycled Water) | Section 6.2.5.4.1 |
| X | Section 6.2.5 | 10633(e) | Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected. | System Supplies (Recycled Water) | Section 6.2.5.4 |
| X | Section 6.2.5 | 10633(f) | Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year. | System Supplies (Recycled Water) | Section 6.2.5.4.2 |
| X | Section 6.2.5 | 10633(g) | Provide a plan for optimizing the use of recycled water in the supplier's service area. | System Supplies (Recycled Water) | Section 6.2.5.4 |
| X | Section 6.2.6 | 10631(g) | Describe desalinated water project opportunities for long-term supply. | System Supplies | Section 6.3 |
| X | Section 6.2.5 | 10633(a) | Describe the wastewater collection and treatment systems in the supplier's service area with quantified amount of collection and treatment and the disposal methods. | System Supplies (Recycled Water) | Section 6.2.5.2.1 |

Appendix C

2020 UWMP Checklist



| Retail | 2020 Guidebook Location | Water Code Section | Summary as Applies to UWMP | Subject | 2020 UWMP Location (For Agency Review Use) |
|--------|------------------------------|--------------------|---|-------------------------------------|--|
| X | Section 6.2.8, Section 6.3.7 | 10631(f) | Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and for a period of drought lasting 5 consecutive water years. | System Supplies | Section 6.5 |
| X | Section 6.4 and Appendix O | 10631.2(a) | The UWMP must include energy information, as stated in the code, that a supplier can readily obtain. | System Suppliers, Energy Intensity | Section 6.8 |
| X | Section 7.2 | 10634 | Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability | Water Supply Reliability Assessment | Sections 6.2, 6.5.1, 6.5.4 and 6.7 |
| X | Section 7.2.4 | 10620(f) | Describe water management tools and options to maximize resources and minimize the need to import water from other regions. | Water Supply Reliability Assessment | Sections 6.2 and 7.1.3 |
| X | Section 7.3 | 10635(a) | Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years. | Water Supply Reliability Assessment | Section 7.1.3 |
| X | Section 7.3 | 10635(b) | Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects. | Water Supply Reliability Assessment | Section 7.3 |
| X | Section 7.3 | 10635(b)(1) | Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts 5 consecutive years. | Water Supply Reliability Assessment | Section 7.3.1 |
| X | Section 7.3 | 10635(b)(2) | Include a determination of the reliability of each source of supply under a variety of water shortage conditions. | Water Supply Reliability Assessment | Section 7.1.2 |
| X | Section 7.3 | 10635(b)(3) | Include a comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period. | Water Supply Reliability Assessment | Section 7.1.3 |
| X | Section 7.3 | 10635(b)(4) | Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria. | Water Supply Reliability Assessment | Section 7.3 |
| X | Chapter 8 | 10632(a) | Provide a water shortage contingency plan (WSCP) with specified elements below. | Water Shortage Contingency Planning | Chapter 8 and Appendix I |
| X | Chapter 8 | 10632(a)(1) | Provide the analysis of water supply reliability (from Chapter 7 of Guidebook) in the WSCP | Water Shortage Contingency Planning | Appendix I Section 1.0 |
| X | Section 8.10 | 10632(a)(10) | Describe reevaluation and improvement procedures for monitoring and evaluation the water shortage contingency plan to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented. | Water Shortage Contingency Planning | Appendix I Section 10.0 |

Appendix C

2020 UWMP Checklist



| Retail | 2020 Guidebook Location | Water Code Section | Summary as Applies to UWMP | Subject | 2020 UWMP Location (For Agency Review Use) |
|--------|-------------------------|-----------------------------------|---|-------------------------------------|--|
| X | Section 8.2 | 10632(a)(2)(A) | Provide the written decision- making process and other methods that the supplier will use each year to determine its water reliability. | Water Shortage Contingency Planning | Appendix I Section 2.1 |
| X | Section 8.2 | 10632(a)(2)(B) | Provide data and methodology to evaluate the supplier's water reliability for the current year and one dry year pursuant to factors in the code. | Water Shortage Contingency Planning | Appendix I Section 2.2 |
| X | Section 8.3 | 10632(a)(3)(A) | Define six standard water shortage levels of 10, 20, 30, 40, 50 percent shortage and greater than 50 percent shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply. | Water Shortage Contingency Planning | Appendix I Section 3.0 |
| X | Section 8.3 | 10632(a)(3)(B) | Suppliers with an existing water shortage contingency plan that uses different water shortage levels must cross reference their categories with the six standard categories. | Water Shortage Contingency Planning | Appendix I Section 3.0 |
| X | Section 8.4 | 10632(a)(4)(A) | Suppliers with water shortage contingency plans that align with the defined shortage levels must specify locally appropriate supply augmentation actions. | Water Shortage Contingency Planning | Appendix I Section 4.3 |
| X | Section 8.4 | 10632(a)(4)(B) | Specify locally appropriate demand reduction actions to adequately respond to shortages. | Water Shortage Contingency Planning | Appendix I Section 4.1 |
| X | Section 8.4 | 10632(a)(4)(C) | Specify locally appropriate operational changes. | Water Shortage Contingency Planning | Appendix I Section 4.4 |
| X | Section 8.4 | 10632(a)(4)(D) | Specify additional mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions are appropriate to local conditions. | Water Shortage Contingency Planning | Appendix I Section 4.2 |
| X | Section 8.4 | 10632(a)(4)(E) | Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action. | Water Shortage Contingency Planning | Appendix I Table 2 and 4 |
| X | Section 8.4.6 | 10632.5 | The plan shall include a seismic risk assessment and mitigation plan. | Water Shortage Contingency Plan | Section 8.2 (website link provided due to document size) |
| X | Section 8.5 | 10632(a)(5)(A) | Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages. | Water Shortage Contingency Planning | Appendix I Section 5.0 |
| X | Section 8.5 and 8.6 | 10632(a)(5)(B)1 10632(a)(5)(C) | Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications. | Water Shortage Contingency Planning | Appendix I Section 5.0 |
| X | Section 8.6 | 10632(a)(6) | Retail supplier must describe how it will ensure compliance with and enforce provisions of the WSCP. | Water Shortage Contingency Planning | Appendix I Section 6.0 |
| X | Section 8.7 | 10632(a)(7)(A) | Describe the legal authority that empowers the supplier to enforce shortage response actions. | Water Shortage Contingency Planning | Appendix I Section 7.0 |

Appendix C

2020 UWMP Checklist



| Retail | 2020 Guidebook Location | Water Code Section | Summary as Applies to UWMP | Subject | 2020 UWMP Location (For Agency Review Use) |
|--------|-------------------------|--------------------|---|--|--|
| X | Section 8.7 | 10632(a)(7)(B) | Provide a statement that the supplier will declare a water shortage emergency per Water Code Chapter 3. | Water Shortage Contingency Planning | Appendix I Section 7.0 |
| X | Section 8.7 | 10632(a)(7)(C) | Provide a statement that the supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency. | Water Shortage Contingency Planning | Appendix I Section 7.0 |
| X | Section 8.8 | 10632(a)(8)(A) | Describe the potential revenue reductions and expense increases associated with activated shortage response actions. | Water Shortage Contingency Planning | Appendix I Section 8.0 |
| X | Section 8.8 | 10632(a)(8)(B) | Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions. | Water Shortage Contingency Planning | Appendix I Section 8.0 |
| X | Section 8.8 | 10632(a)(8)(C) | Retail suppliers must describe the cost of compliance with Water Code Chapter 3.3: Excessive Residential Water Use During Drought | Water Shortage Contingency Planning | Appendix I Section 6.0 and 8.0 |
| X | Section 8.9 | 10632(a)(9) | Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance. | Water Shortage Contingency Planning | Appendix I Section 9.0 |
| X | Section 8.11 | 10632(b) | Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas. | Water Shortage Contingency Planning | Appendix I Section 11.0 |
| X | Sections 8.12 and 10.4 | 10635(c) | Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 30 days after the submission of the plan to DWR. | Plan Adoption, Submittal, and Implementation | Appendix I Section 12.0 |
| X | Section 8.14 | 10632(c) | Make available the Water Shortage Contingency Plan to customers and any city or county where it provides water within 30 days after adopted the plan. | Water Shortage Contingency Planning | Appendix I Section 12.0 |
| | Sections 9.1 and 9.3 | 10631(e)(2) | Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program. | Demand Management Measures | N/A |
| X | Sections 9.2 and 9.3 | 10631(e)(1) | Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code. | Demand Management Measures | Section 9.2 |
| X | Chapter 10 | 10608.26(a) | Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance). | Plan Adoption, Submittal, and Implementation | Section 10.3 |
| X | Section 10.2.1 | 10621(b) | Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Reported in Table 10-1. | Plan Adoption, Submittal, and Implementation | Section 10.2.1 |
| X | Section 10.4 | 10621(f) | Each urban water supplier shall update and submit its 2020 plant the department by July 1, 2021. | Plan Adoption, Submittal, and Implementation | Section 10.4 |

Appendix C

2020 UWMP Checklist



| Retail | 2020 Guidebook Location | Water Code Section | Summary as Applies to UWMP | Subject | 2020 UWMP Location (For Agency Review Use) |
|--------|---------------------------------|--------------------|--|--|--|
| X | Sections 10.2.2, 10.3, and 10.5 | 10642 | Provide supporting documentation that the urban water supplier made the plan and contingency plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan and contingency plan. | Plan Adoption, Submittal, and Implementation | Sections 10.2.2 and 10.3 |
| X | Section 10.2.2 | 10642 | The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. | Plan Adoption, Submittal, and Implementation | Sections 10.2.2 and 10.3 |
| X | Section 10.3.2 | 10642 | Provide supporting documentation that the plan and contingency plan has been adopted as prepared or modified. | Plan Adoption, Submittal, and Implementation | Section 10.3.2 |
| X | Section 10.4 | 10644(a) | Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library. | Plan Adoption, Submittal, and Implementation | Section 10.4 |
| X | Section 10.4 | 10644(a)(1) | Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption. | Plan Adoption, Submittal, and Implementation | Section 10.5 |
| X | Sections 10.4.1 and 10.4.2 | 10644(a)(2) | The plan, or amendments to the plan, submitted to the department shall be submitted electronically. | Plan Adoption, Submittal, and Implementation | Section 10.4 |
| X | Section 10.5 | 10645(a) | Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours. | Plan Adoption, Submittal, and Implementation | Section 10.4 |
| X | Section 10.5 | 10645(b) | Provide supporting documentation that, not later than 30 days after filing a copy of its water shortage contingency plan with the department, the supplier has or will make the plan available for public review during normal business hours. | Plan Adoption, Submittal, and Implementation | Section 10.4 |
| X | Section 10.6 | 10621(c) | If supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings. | Plan Adoption, Submittal, and Implementation | N/A |
| X | Section 10.7.2 | 10644(b) | If revised, submit a copy of the water shortage contingency plan to DWR within 30 days of adoption. | Plan Adoption, Submittal, and Implementation | Section 10.6 |

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Appendix D

Agency and Public Notices

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CITY OF STOCKTON

MUNICIPAL UTILITIES • 2500 Navy Drive • Stockton, CA 95206 • 209-937-8700
www.stocktonca.gov

June 15, 2020

Alex Chetley
Development Services
San Joaquin County Public Works
1801 E. Hazelton Ave.
Stockton, CA 95205

SUBJECT: Preparation of 2020 Urban Water Management Plan

Dear Alex Chetley:

The City of Stockton (City) is currently in the process of updating its Urban Water Management Plan (UWMP). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. The City's 2015 UWMP was adopted in June 2016, and the City's 2020 UWMP is required to be submitted to the California Department of Water Resources by July 1, 2021.

The UWMP is a planning document and a source document which reports, describes, and evaluates water deliveries and uses, water supply sources and conservation efforts. As an urban water supplier, the City coordinates with water management agencies, relevant public agencies and other water suppliers on the preparation of the UWMP update. The City will review the UWMP and will make amendments and updates, as appropriate.

If you wish to contact the City about its review process, you may do so by writing to the undersigned or by email to Danny.Trejo@StocktonCA.Gov.

Sincerely,

City of Stockton

Danny Trejo
Program Manager III – Water Resources



CITY OF STOCKTON

MUNICIPAL UTILITIES • 2500 Navy Drive • Stockton, CA 95206 • 209-937-8700
www.stocktonca.gov

June 15, 2020

Anders Christensen
District Manager
Woodbridge Irrigation District
PO Box 580
Woodbridge, CA 95258

SUBJECT: Preparation of 2020 Urban Water Management Plan

Dear Anders Christensen:

The City of Stockton (City) is currently in the process of updating its Urban Water Management Plan (UWMP). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. The City's 2015 UWMP was adopted in June 2016, and the City's 2020 UWMP is required to be submitted to the California Department of Water Resources by July 1, 2021.

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Sincerely,

City of Stockton

Danny Trejo
Program Manager III – Water Resources



CITY OF STOCKTON

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www.stocktonca.gov

June 15, 2020

Jeremiah Mecham
District Manager
California Water Service
1505 E. Sonora St.
Stockton, CA 95205

SUBJECT: Preparation of 2020 Urban Water Management Plan

Dear Jeremiah Mecham:

The City of Stockton (City) is currently in the process of updating its Urban Water Management Plan (UWMP). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. The City's 2015 UWMP was adopted in June 2016, and the City's 2020 UWMP is required to be submitted to the California Department of Water Resources by July 1, 2021.

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Danny Trejo
Program Manager III – Water Resources



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June 15, 2020

Matt Zidar
Water Resources Manager
Eastern San Joaquin Groundwater Authority
1810 E. Hazelton Ave.
Stockton, CA 95201

SUBJECT: Preparation of 2020 Urban Water Management Plan

Dear Matt Zidar:

The City of Stockton (City) is currently in the process of updating its Urban Water Management Plan (UWMP). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. The City's 2015 UWMP was adopted in June 2016, and the City's 2020 UWMP is required to be submitted to the California Department of Water Resources by July 1, 2021.

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Sincerely,

City of Stockton

Danny Trejo
Program Manager III – Water Resources



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www.stocktonca.gov

June 15, 2020

Scot Moody
General Manager
Stockton East Water District
PO Box 5157
Stockton, CA 95205

SUBJECT: Preparation of 2020 Urban Water Management Plan

Dear Scot Moody:

The City of Stockton (City) is currently in the process of updating its Urban Water Management Plan (UWMP). The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually to prepare and adopt an UWMP and periodically update that plan at least every five years. The City's 2015 UWMP was adopted in June 2016, and the City's 2020 UWMP is required to be submitted to the California Department of Water Resources by July 1, 2021.

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Sincerely,

City of Stockton

Danny Trejo
Program Manager III – Water Resources



CITY OF STOCKTON

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February 17, 2021

Jeremiah Mecham
District Manager
California Water Service
1505 E. Sonora St.
Stockton, CA 95205

PREPARATION OF WATER SHORTAGE CONTINGENCY PLAN

The City of Stockton is currently in the process of updating its Water Shortage Contingency Plan (WSCP) as part of its 2020 Urban Water Management Plan development. The WSCP will provide a guide for City of Stockton to assess water supply availability and mitigate water supply shortages to maintain public health and safety. It provides a plan for response to various water supply shortage conditions.

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

If you wish to contact the City of Stockton about its review process, you may do so by writing to the undersigned or by email to Danny.Trejo@StocktonCA.gov.

JOHN ABREW
DIRECTOR OF MUNICIPAL UTILITIES

DANNY TREJO
PROGRAM MANAGER III/WATER RESOURCES

JA:DT:jdc



CITY OF STOCKTON

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February 17, 2021

Matt Zidar
Water Resources Manager
Eastern San Joaquin Groundwater Authority
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JOHN ABREW
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DANNY TREJO
PROGRAM MANAGER III/WATER RESOURCES

JA:DT:jdc



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February 17, 2021

Alex Chetley
Development Services
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DANNY TREJO
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February 17, 2021

Scot Moody
General Manager
Stockton East Water District
PO Box 5157
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JOHN ABREW
DIRECTOR OF MUNICIPAL UTILITIES

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JA:DT:jdc



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February 17, 2021

Anders Christensen
District Manager
Woodbridge Irrigation District
PO Box 580
Woodbridge, CA 95258

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JOHN ABREW
DIRECTOR OF MUNICIPAL UTILITIES

DANNY TREJO
PROGRAM MANAGER III/WATER RESOURCES

JA:DT:jdc

Danny Trejo

From: Danny Trejo
Sent: Monday, May 17, 2021 12:08 PM
To: Justin Hopkins; Storms, Maximilian (Max); Hurley, Michael; Manuel Verduzco; Darrel Evensen
Cc: Mel Lytle; Mitchell Maidrand (Mitchell.Maidrand@stocktonca.gov)
Subject: City of Stockton: 2020 Draft UWMP

Good Afternoon,

Below is the link to the City of Stockton's draft UWMP. This version is consistent with the version planned for public review and comment. Please share this with others in your organization that may be interested in the information.

<https://stocktonca.gov/government/departments/municipalUtilities/utilWaterQual.html>

Should you have any questions or comments, please feel free to contact me.

Thank You,



Danny Trejo
Program Manager III – Water
Municipal Utilities
Phone: 209.937.8782

City of Stockton
Municipal Utilities Department
11373 N. Lower Sacramento Rd.
Lodi, CA 95242

**THE RECORD
PROOF OF PUBLICATION**

STATE OF CALIFORNIA
COUNTY OF SAN JOAQUIN

THE UNDERSIGNED SAYS:

I am a citizen of the United States and a resident of San Joaquin County; I am over the age of 18 years and not a part to or interested in the above-entitled matter. I am the principal clerk of the printer of THE RECORD, a newspaper of general publication, printed and published daily in the City of Stockton, County of San Joaquin by the Superior Court of the County of San Joaquin, State of California, under the date of February 26, 1952, File No. 52857, San Joaquin County Records; that the notice of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published each regular and entire issue of said newspaper and not in any supplement thereof on the following dates,
To wit,
May 17 2021, May 24 2021

I declare under penalty of perjury that the foregoing is true and correct. Executed on May 24, 2021
In Stockton California



Delailah Little,
The Record

0000232447

**NOTICE OF PUBLIC HEARING
CITY OF STOCKTON 2020 URBAN WATER MANAGEMENT PLAN
AND WATER SHORTAGE CONTINGENCY PLAN**

On Tuesday, June 8, 2021, at 5:30 pm, in the Council Chamber, 425 N El Dorado St, Stockton, California, a public hearing will be held to consider a resolution to approve and adopt the 2020 Urban Water Management Plan; and to consider a resolution to approve and adopt the Water Shortage Contingency Plan. The 2020 Urban Water Management Plan and the Water Shortage Contingency Plan will be made available on May 17, 2021 for viewing at www.stocktonca.gov/mud.

All City Council proceedings are conducted in English. If an interpreter is needed, it shall be the responsibility of the person needing a translator to privately retain one.

Anyone wishing to be heard on this matter may appear at the public hearing and/or file a written opinion with the City Clerk, City Hall, Stockton, prior to the hearing. If you challenge the proposed action in court, you may be limited to raising only those issues you or someone else raised at the public hearing, or in written correspondence delivered to the City Council at, or prior to, the public hearing.

During this time of local health concerns, City Hall has limited socially-distanced seating available to the public. Due to these concerns, you are strongly encouraged to watch the meeting online and you can submit your public comments electronically.

1. You can view the live meeting at www.stocktonca.gov/CouncilMeetings.
2. eComment - Go to <https://stockton.granicusideas.com/meetings> to submit an eComment(s). Only one comment per agenda item, per person will be included into the record.
3. Email - CityClerk@stocktonca.gov if you prefer to email your comments in. Only one comment per agenda item, per person will be included into the record.
4. Public comment voicemail - (209) 937-8459 if you wish to leave your public comment in the form of a voicemail, it will be transcribed and included to the City Clerk. Only one comment per agenda item, per person will be included into the record.
5. WebEx virtual participation - If you wish to join the meeting virtually to provide public comment please contact the City Clerk's Office at (209) 937-8459 or CityClerk@stocktonca.gov no later than 5:00 pm the day of the meeting. You will be asked to provide your name, phone number, your email, and the item you wish to speak on. You will be emailed instructions to log into WebEx to participate in the meeting.

ELIZA R. GARZA, CMG
CITY CLERK
CITY OF STOCKTON

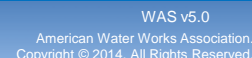
#232447 5/17, 5/24, 2021



Appendix E

Distribution System Water Loss Audits

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Reporting Worksheet 1



AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0
American Water Works Association
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| | |
|---|----------------------------|
| ? | Click to access definition |
| + | Click to add a comment |

Water Audit Report for: **City of Stockton (CA3910006)**
Reporting Year: **2016** **1/2016 - 12/2016**

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

WATER SUPPLIED

| | | | | | | | | | | | |
|---|---|---|---|-----------|-------|-------|---|--------|-----------------------|-----------------------|-------|
| <----- Enter grading in column 'E' and 'J' -----> | | | | | | Pcnt: | | Value: | | | |
| Volume from own sources: | + | ? | 5 | 7,386.340 | MG/Yr | + | ? | 6 | <input type="radio"/> | <input type="radio"/> | MG/Yr |
| Water imported: | + | ? | 5 | 1,684.590 | MG/Yr | + | ? | 9 | <input type="radio"/> | <input type="radio"/> | MG/Yr |
| Water exported: | + | ? | 3 | 490.820 | MG/Yr | + | ? | 2 | <input type="radio"/> | <input type="radio"/> | MG/Yr |

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: **8,580.110** MG/Yr

AUTHORIZED CONSUMPTION

| | | | | | |
|---------------------|---|---|-----|-----------|-------|
| Billed metered: | + | ? | 4 | 7,708.250 | MG/Yr |
| Billed unmetered: | + | ? | n/a | 0.000 | MG/Yr |
| Unbilled metered: | + | ? | n/a | 0.000 | MG/Yr |
| Unbilled unmetered: | + | ? | 5 | 21.450 | MG/Yr |

AUTHORIZED CONSUMPTION: **7,729.700** MG/Yr

Click here: ?
for help using option
buttons below

Pcnt: Value: 21.450 MG/Yr

Use buttons to select
percentage of water supplied
OR
value

WATER LOSSES (Water Supplied - Authorized Consumption)

Apparent Losses

Unauthorized consumption: **21.450** MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

| | | | | | |
|----------------------------------|---|---|---|---------|-------|
| Customer metering inaccuracies: | + | ? | 2 | 238.399 | MG/Yr |
| Systematic data handling errors: | + | ? | | 19.271 | MG/Yr |

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: **279.120** MG/Yr

Pcnt: Value: 0.25% MG/Yr

3.00% MG/Yr
0.25% MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: **571.289** MG/Yr

WATER LOSSES: **850.410** MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: **871.860** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

| | | | | | |
|--|---|---|---|--------|-----------------|
| Length of mains: | + | ? | 6 | 590.0 | miles |
| Number of <u>active</u> AND <u>inactive</u> service connections: | + | ? | 8 | 48,919 | |
| Service connection density: | ? | | | 83 | conn./mile main |

Are customer meters typically located at the curbside or property line? **Yes**

Average length of customer service line: **60.0**

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: **60.0** psi

(length of service line, beyond the property boundary,
that is the responsibility of the utility)

COST DATA

| | | | | | |
|---|---|---|---|--------------|-------------------------|
| Total annual cost of operating water system: | + | ? | 1 | \$49,000,000 | \$/Year |
| Customer retail unit cost (applied to Apparent Losses): | + | ? | 4 | \$2.00 | \$/100 cubic feet (ccf) |
| Variable production cost (applied to Real Losses): | + | ? | 2 | \$2,889.71 | \$/Million gallons |

☐ Use Customer Retail Unit Cost to value real losses

Retail costs are less than (or equal to) production costs; please review and correct if necessary

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 40 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources

2: Total annual cost of operating water system

3: Billed metered



AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0
American Water Works Association
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 Click to add a comment

Water Audit Report for: **City of Stockton (CA3910006)**
Reporting Year: **2017** **1/2017 - 12/2017**

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

WATER SUPPLIED

Volume from own sources: MG/Yr
Water imported: MG/Yr
Water exported: MG/Yr

Master Meter and Supply Error Adjustments

Pcnt: MG/Yr
 MG/Yr
 MG/Yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: **9,538.770** MG/Yr

AUTHORIZED CONSUMPTION

Billed metered: MG/Yr
Billed unmetered: MG/Yr
Unbilled metered: MG/Yr
Unbilled unmetered: MG/Yr

AUTHORIZED CONSUMPTION: **8,782.677** MG/Yr

Click here: for help using option buttons below

Pcnt: MG/Yr

Use buttons to select percentage of water supplied OR value

WATER LOSSES (Water Supplied - Authorized Consumption)

Apparent Losses

Unauthorized consumption: MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies: MG/Yr
Systematic data handling errors: MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: **179.127** MG/Yr

Pcnt: MG/Yr

MG/Yr
 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: MG/Yr

WATER LOSSES: **756.093** MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: **779.940** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains: miles
Number of active AND inactive service connections:
Service connection density: conn./mile main

Are customer meters typically located at the curbstop or property line?

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: psi

COST DATA

Total annual cost of operating water system: \$/Year
Customer retail unit cost (applied to Apparent Losses): \$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses): \$/Million gallons ☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 54 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources

2: Billed metered

3: Customer metering inaccuracies



AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0
American Water Works Association
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Click to access definition
 Click to add a comment

Water Audit Report for: **City of Stockton (CA3910006)**
Reporting Year: **2018** **1/2018 - 12/2018**

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

WATER SUPPLIED

Volume from own sources: MG/Yr
Water imported: MG/Yr
Water exported: MG/Yr

Master Meter and Supply Error Adjustments

Pcnt: MG/Yr
Value: MG/Yr
 MG/Yr
 MG/Yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: **9,776.180** MG/Yr

AUTHORIZED CONSUMPTION

Billed metered: MG/Yr
Billed unmetered: MG/Yr
Unbilled metered: MG/Yr
Unbilled unmetered: MG/Yr

AUTHORIZED CONSUMPTION: **8,848.300** MG/Yr

Click here: for help using option buttons below

Pcnt: MG/Yr
Value: MG/Yr

Use buttons to select percentage of water supplied
OR
value

WATER LOSSES (Water Supplied - Authorized Consumption)

Apparent Losses

Unauthorized consumption: MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies: MG/Yr
Systematic data handling errors: MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: **180.874** MG/Yr

Pcnt: MG/Yr
Value: MG/Yr

MG/Yr
 MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: MG/Yr

WATER LOSSES: **927.880** MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: **952.320** MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains: miles
Number of active AND inactive service connections:
Service connection density: conn./mile main

Are customer meters typically located at the curbstop or property line?

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: psi

COST DATA

Total annual cost of operating water system: \$/Year
Customer retail unit cost (applied to Apparent Losses): \$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses): \$/Million gallons ☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 58 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources

2: Customer metering inaccuracies

3: Billed metered



AWWA Free Water Audit Software: Reporting Worksheet

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American Water Works Association
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? Click to access definition
+ Click to add a comment

Water Audit Report for: **City of Stockton (CA3910006)**
Reporting Year: **2019** **1/2019 - 12/2019**

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: MILLION GALLONS (US) PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

<----- Enter grading in column 'E' and 'J' ----->

Master Meter and Supply Error Adjustments

WATER SUPPLIED

Volume from own sources: + ? 5 7,986.660 MG/Yr
Water imported: + ? 7 1,986.710 MG/Yr
Water exported: + ? 5 544.440 MG/Yr

Pcnt: Value:
+ ? 3 MG/Yr
+ ? 3 MG/Yr
+ ? 1 MG/Yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 9,428.930 MG/Yr

AUTHORIZED CONSUMPTION

Billed metered: + ? 5 8,429.490 MG/Yr
Billed unmetered: + ? n/a 0.000 MG/Yr
Unbilled metered: + ? n/a 0.000 MG/Yr
Unbilled unmetered: + ? 5 23.572 MG/Yr

Click here: ?
for help using option
buttons below

Pcnt: Value:
MG/Yr

Use buttons to select
percentage of water
supplied
OR
value

AUTHORIZED CONSUMPTION: 8,453.062 MG/Yr

WATER LOSSES (Water Supplied - Authorized Consumption)

Apparent Losses

Unauthorized consumption: + ? 23.572 MG/Yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies: + ? 3 128.368 MG/Yr
Systematic data handling errors: + ? 21.074 MG/Yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 173.014 MG/Yr

Pcnt: Value:
0.25% MG/Yr

1.50% MG/Yr
0.25% MG/Yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: ? 802.854 MG/Yr

WATER LOSSES: 975.868 MG/Yr

NON-REVENUE WATER

NON-REVENUE WATER: 999.440 MG/Yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains: + ? 9 672.0 miles
Number of active AND inactive service connections: + ? 9 49,247
Service connection density: ? 73 conn./mile main

Are customer meters typically located at the curbside or property line? Yes

Average length of customer service line: + ? (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: + ? 5 60.0 psi

COST DATA

Total annual cost of operating water system: + ? 10 \$49,415,943 \$/Year
Customer retail unit cost (applied to Apparent Losses): + ? 9 \$3.02 \$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses): + ? 5 \$1,412.72 \$/Million gallons ☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 59 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources

2: Customer metering inaccuracies

3: Billed metered

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Appendix F

SB X7-7 Compliance Form and DWR Population Tool

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| |
|---|
| SB X7-7 Table 0: Units of Measure Used in 2020 UWMP* (select one from the drop down list) |
| Acre Feet |
| <i>*The unit of measure must be consistent throughout the UWMP, as reported in Submittal Table 2-3.</i> |
| NOTES: |

| | |
|--|--|
| SB X7-7 Table 2: Method for 2020 Population Estimate | |
| Method Used to Determine 2020 Population (may check more than one) | |
| <input type="checkbox"/> | 1. Department of Finance (DOF) or American Community Survey (ACS) |
| <input type="checkbox"/> | 2. Persons-per-Connection Method |
| <input checked="" type="checkbox"/> | 3. DWR Population Tool |
| <input type="checkbox"/> | 4. Other DWR recommends pre-review |
| NOTES: The DWR Population Tool allows for the 2010 persons per connection to be used to determine that 2020 population. This modification was used to estimated the COSMUD 2020 water service area population. | |

| | |
|--|---------|
| SB X7-7 Table 3: 2020 Service Area Population | |
| 2020 Compliance Year Population | |
| 2020 | 184,402 |
| NOTES: | |

SB X7-7 Table 4: 2020 Gross Water Use

| Compliance Year 2020 | 2020 Volume Into Distribution System <i>This column will remain blank until SB X7-7 Table 4-A is completed.</i> | 2020 Deductions | | | | | 2020 Gross Water Use |
|-------------------------|---|---------------------|---|---|---|--|-------------------------|
| | | Exported Water * | Change in Dist. System Storage* (+/-) | Indirect Recycled Water <i>This column will remain blank until SB X7-7 Table 4-B is completed.</i> | Water Delivered for Agricultural Use* | Process Water <i>This column will remain blank until SB X7-7 Table 4-D is completed.</i> | |
| | 34,404 | 1,830 | - | - | - | - | 32,574 |

* Units of measure (AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES: Units are in acre-feet (AF). Water exported to San Joaquin County water service areas that are within the COSMUD water service area.

**SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s),
Meter Error Adjustment**

Complete one table for each source.

| Name of Source | | SEWD | |
|--|---|---|--|
| This water source is (check one): | | | |
| <input checked="" type="checkbox"/> | The supplier's own water source | | |
| <input type="checkbox"/> | A purchased or imported source | | |
| Compliance Year 2020 | Volume Entering Distribution System ¹ | Meter Error Adjustment ² Optional (+/-) | Corrected Volume Entering Distribution System |
| | 6,938 | - | 6,938 |

¹ **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

² **Meter Error Adjustment** - See guidance in Methodology 1, Step 3 of Methodologies Document

NOTES: Units are in acre-feet (AF).

**SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s)
Meter Error Adjustment**

Complete one table for each source.

| Name of Source | | San Joaquin River | |
|--|---|---|--|
| This water source is (check one): | | | |
| <input checked="" type="checkbox"/> | The supplier's own water source | | |
| <input checked="" type="checkbox"/> | A purchased or imported source | | |
| Compliance Year 2020 | Volume Entering Distribution System ¹ | Meter Error Adjustment ² Optional (+/-) | Corrected Volume Entering Distribution System |
| | 18,804 | | 18,804 |

¹ **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

² **Meter Error Adjustment** - See guidance in Methodology 1, Step 3 of Methodologies Document

NOTES: Units are in acre-feet (AF). The total volume is the volume treated at the DWTP which includes primarily water supply from the San Joaquin River with WID raw water.

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment

Complete one table for each source.

| Name of Source | Groundwater | | |
|--|---|---|--|
| This water source is (check one): | | | |
| <input checked="" type="checkbox"/> | The supplier's own water source | | |
| <input type="checkbox"/> | A purchased or imported source | | |
| Compliance Year 2020 | Volume Entering Distribution System ¹ | Meter Error Adjustment ² Optional (+/-) | Corrected Volume Entering Distribution System |
| | 8,662 | | 8,662 |

¹ **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

² **Meter Error Adjustment** - See guidance in Methodology 1, Step 3 of Methodologies Document

NOTES: Units are in acre-feet.

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment

Complete one table for each source.

| Name of Source | Enter Supply Source | | |
|--|---|---|--|
| This water source is (check one): | | | |
| <input type="checkbox"/> | The supplier's own water source | | |
| <input type="checkbox"/> | A purchased or imported source | | |
| Compliance Year 2020 | Volume Entering Distribution System ¹ | Meter Error Adjustment ² Optional (+/-) | Corrected Volume Entering Distribution System |
| | | | 0 |

¹ **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

² **Meter Error Adjustment** - See guidance in Methodology 1, Step 3 of Methodologies Document

NOTES:

| SB X7-7 Table 5: 2020 Gallons Per Capita Per Day (GPCD) | | |
|---|--|-----------|
| 2020 Gross Water <i>Fm SB X7-7 Table 4</i> | 2020 Population <i>Fm SB X7-7 Table 3</i> | 2020 GPCD |
| 32,574 | 184,402 | 158 |
| NOTES: 2020 gross water use is in acre-feet (AF). | | |

Population Using Persons-Per-SF Connection and Persons-Per-MF/GQ Connection

| Year | | # SF Connections | # MF/GQ Connections | Persons per SF Connection | Persons per MF/GQ Connection | SF Population | MF/GQ Population | Total Population |
|---|------|---------------------|------------------------|------------------------------|---------------------------------|------------------|---------------------|---------------------|
| 10 to 15 Year Baseline Population Calculations | | | | | | | | |
| Year 1 | 1998 | 25366 | 4123 | 3.68 | 7.91 | 93,398 | 32,605 | 126,002 |
| Year 2 | 1999 | 26546 | 4148 | 3.67 | 7.97 | 97,450 | 33,076 | 130,527 |
| Year 3 | 2000 | 27903 | 4184 | 3.66 | 8.04 | 102,069 | 33,647 | 135,716 |
| Year 4 | 2001 | 29576 | 4189 | 3.65 | 7.96 | 107,834 | 33,357 | 141,191 |
| Year 5 | 2002 | 30345 | 4997 | 3.63 | 7.89 | 110,213 | 39,406 | 149,619 |
| Year 6 | 2003 | 32961 | 4984 | 3.62 | 7.81 | 119,253 | 38,920 | 158,173 |
| Year 7 | 2004 | 36024 | 4901 | 3.60 | 7.73 | 129,830 | 37,895 | 167,725 |
| Year 8 | 2005 | 38511 | 5078 | 3.59 | 7.65 | 138,254 | 38,872 | 177,127 |
| Year 9 | 2006 | 40525 | 3692 | 3.58 | 7.58 | 144,917 | 27,978 | 172,895 |
| Year 10 | 2007 | 40271 | 3666 | 3.56 | 7.50 | 143,445 | 27,499 | 170,944 |
| 5 Year Baseline Population Calculations | | | | | | | | |
| Year 1 | 2005 | 38511 | 5078 | 3.59 | 7.65 | 138,254 | 38,872 | 177,127 |
| Year 2 | 2006 | 40525 | 3692 | 3.58 | 7.58 | 144,917 | 27,978 | 172,895 |
| Year 3 | 2007 | 40271 | 3666 | 3.56 | 7.50 | 143,445 | 27,499 | 170,944 |
| Year 4 | 2008 | 40311 | 3636 | 3.55 | 7.42 | 143,023 | 26,994 | 170,017 |
| Year 5 | 2009 | 40709 | 3578 | 3.53 | 7.35 | 143,866 | 26,288 | 170,153 |
| 2020 Compliance Year Population Calculations | | | | | | | | |
| 2020 | | 41920 | 5068 | 3.37 * | 6.50 * | 141,455 | 32,934 | 174,389 |

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Appendix G

Water Supply Agreements

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SECOND AMENDED CONTRACT

SECOND AMENDED CONTRACT

AMONG THE STOCKTON EAST WATER DISTRICT, THE
CALIFORNIA WATER SERVICE COMPANY, THE CITY OF
STOCKTON, THE LINCOLN VILLAGE MAINTENANCE
DISTRICT, AND THE COLONIAL HEIGHTS MAINTENANCE
DISTRICT PROVIDING FOR THE SALE OF TREATED WATER

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EXHIBIT

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The original contract ("Original Contract") was made the 11th day of February, 1975, among Stockton East Water District, a political subdivision of the State of California, hereinafter referred to as Stockton East, the California Water Service Company, a California corporation, hereinafter referred to as Cal-Water, the City of Stockton, a municipal corporation of the State of California, hereinafter referred to as City, the Lincoln Village Maintenance District, a political subdivision of the State of California, governed by the Board of Supervisors of San Joaquin County, hereinafter referred to as Lincoln, and the Colonial Heights Maintenance District, a political subdivision of the State of California, governed by the Board of Supervisors of San Joaquin County, hereinafter referred to as Colonial. This Second Amended Contract is made this _____ day of _____, 19____, by and among all the same parties as were parties to the Original Contract.

WITNESSETH THAT:

WHEREAS, Stockton East contemplated the construction of water treatment facilities which would permit treatment of raw water available to Stockton East and in turn make the same available for municipal and industrial use within Stockton East through Cal-Water, City, Lincoln and Colonial, which operate "municipal" water distribution systems within that portion of Stockton East commonly known as the Stockton Metropolitan Area; and

WHEREAS, it was anticipated that said water treatment facilities would have a nominal capacity to treat and distribute 20,000 acre feet of water per year and would be physically capable of treating additional quantities of water annually; and

WHEREAS, in order to construct said water treatment facilities, pursuant to authority granted to it by an affirmative vote at an election held on March 5, 1974, Stockton East sold revenue bonds pursuant to the Revenue Bond Law of 1941, which bonds have a maximum amortization period of not to exceed 30 years from the date of their issue; and

WHEREAS, said water treatment facilities have been constructed; and

WHEREAS, the purpose of constructing and operating the water treatment facilities was to assist in alleviating severe ground water overdraft problems especially in the western portion of Stockton East underlying the Stockton Metropolitan Area, and particularly to stop, or slow the

rate of, falling ground water tables and related saline intrusion from the west; and

WHEREAS, Stockton East with the concurrence of City, Cal-Water, and the Board of Supervisors of San Joaquin County has heretofore had prepared, approved and adopted a "Master Water Plan" and a "Contingency Water Plan" and an "Environmental Impact Report dated October, 1973" to serve as guidelines to Stockton East in solving the water problems of Stockton East and in providing solutions in the problems of ground water overdraft and saline intrusion, which plans, among other things, contemplated the construction of water treatment facilities; and

WHEREAS, since the construction of the water treatment facilities, there has been completed the Eastern San Joaquin Groundwater Study; and

WHEREAS, that Study demonstrates that an additional annual minimum of 30,000 acre feet of supplemental surface water must be imported into the Stockton Metropolitan Area in order to meet the needs of that area by the year 2020; and

WHEREAS, it is the desire and intention of all of the parties that said water treatment facilities, and the distribution of water treated by them, will be operated and conducted at all times in a manner which will have the most beneficial effect possible in reducing ground water overdraft, reducing the rate of lowering of underground water levels and of reducing saline intrusion into the ground water basin underlying Stockton East; and

WHEREAS, under date of August 25, 1970, Stockton East under its prior name of Stockton and East San Joaquin Water Conservation District, entered into contracts with the United States of America and the Calaveras County Water District by which Stockton East obtained a portion of the supply of water developed by New Hogan Dam on the Calaveras River; and

WHEREAS, under date of December 19, 1983, Stockton East entered into a contract with the United States Department of the Interior, Bureau of Reclamation, by which Stockton East obtained the right to a portion of the supply of water developed by New Melones Dam on the Stanislaus River, on an interim basis; and

WHEREAS, Stockton East has allocated a portion of its water supply from New Hogan Dam and New Melones Dam together with such other water supplies as it may have now and in

the future to said water treatment facilities so as to permit said water treatment facilities to produce a minimum of 20,000 acre feet of treated water per year; and

WHEREAS, in order to eliminate the present ground water overdraft and to meet its municipal and industrial and agricultural needs, Stockton East requires additional supplies of water in excess of those which it now obtains from New Hogan Dam and is now endeavoring to obtain the supplies of water which it requires from various sources which may now or in the future be available; and

WHEREAS, in order to make the most beneficial use of the water from New Hogan Dam, New Melones Dam, and any other source, it will be necessary to construct conveyance and storage facilities, and to expand the existing water treatment facilities; and

WHEREAS, a First Amendment to the Original Contract was made May 31, 1977, and expired March 31, 1978; and

WHEREAS, the parties hereto desire to enter into this Second Amended Contract so as to produce the maximum benefit to the underground basin by providing for a mechanism for the financing and construction of such conveyance, storage and expanded water treatment facilities as may be necessary, and by altering the method of payment of the base monthly payment under the Original Contract so as to provide maximum incentive for use of treated water in a cost effective and/or energy efficient manner thereby reducing the use of water produced from the underground basin; and

WHEREAS, Stockton East will perform studies necessary to provide recommendations to the Contractors intended to optimize energy efficiency; and

WHEREAS, it is the intent of the parties hereto that this Second Amended Contract shall apply to all treated water produced by the water treatment facilities, regardless of the source of raw water so treated;

Now, Therefore, It Is Agreed As Follows:

1. DEFINITIONS: When used herein, unless otherwise indicated expressly to the contrary, the following words, terms and phrases shall have the following meanings:

1A. "Acquisition and Construction Fund" means the fund having such name established and defined by the Bond Resolution.

1B. "Agricultural water" means water used primarily in the commercial production of agricultural crops or live-stock, including domestic use incidental thereto, on tracts of land operated in units of more than 2 acres.

1C. "Annual Audit" means the audit to be undertaken each year, by a certified public accountant selected by Stockton East, in accordance with subparagraphs 5C and 6C.

1D. "Annually" refers to the 12-month period commencing on April 1 and ending on the next succeeding March 31st.

1E. "Base monthly payment" means the basic payment which each Contractor shall pay and which the Contractors together shall pay, the amount of which shall be calculated on an annual basis pursuant to Paragraph 5 and shall be paid on a monthly basis pursuant to Paragraph 6.

1F. "Base supply of raw water" means the minimum supply of raw water provided by Stockton East from various sources to meet the needs of the water treatment facilities, which base supply of raw water shall be 20,000 acre feet per year except as provided in subparagraphs 4J, 4K, and 4L.

1G. "Base supply of treated water" means the minimum supply of treated water which Stockton East will furnish from the water treatment facilities to Contractors in the manner set forth in this Second Amended Contract, which base supply of treated water shall be 20,000 acre feet per year except as provided in subparagraphs 4J, 4K, and 4L.

1H. "Bond Resolution" means the resolution adopted by Stockton East on February 20, 1975, identified as Resolution No. 74-75-21.

1I. "Bond Reserve Account" means the account held as a reserve fund by Stockton East, and used by Stockton East in accordance with the Bond Resolution.

1J. "Bond Sinking Fund Account" means the account having such name established and defined by the Bond Resolution.

1K. "Contractors" means the parties to this Second Amended Contract, other than Stockton East, or any other parties who may hereafter take water in accordance with Paragraph 13 and who further agree to be bound by all of the terms of this Second Amended Contract as the same now exists or as it may have been amended at the time such additional Contractors agree to take water and who agree in

writing to be bound by this Second Amended Contract or this Second Amended Contract as amended.

1L. "Conveyance and Storage Facilities" means those facilities not at present constructed which Stockton East intends to construct in order to acquire, store and convey raw water to the water treatment facilities from sources other than New Hogan Dam.

1M. "Debt service" means the payments required to be made during each year for principal, interest and other charges to the holders of the water treatment facilities bonds, all in accordance with the schedule attached hereto as Exhibit "A", provided that debt service shall not include premiums on water treatment facilities bonds required to be called under the Bond Resolution except to the extent that any such premium in any year exceeds interest earned in such year on the Bond Sinking Fund Account.

1N. "Debt service surcharge" means an annual sum equal to 20% of annual debt service.

1O. "Initial delivery date" means March 10, 1977, the date of first delivery of treated water from the water treatment facilities into the distribution facilities of Cal-Water under the Original Contract.

1P. "Initial delivery of water" means the actual first delivery of treated water from the water treatment facilities into the distribution facilities of any one or more of the Contractors.

1Q. "Intake facilities" means the facilities constructed as a part of the water treatment facilities at Bellota, San Joaquin County, California, to divert water into the raw water transmission line.

1R. "Municipal and industrial share" means the percentage of the cost of acquisition of supplemental surface water from any source other than New Hogan Dam, including the cost of acquisition of such water and the cost of construction of conveyance and storage facilities which is allocated as municipal and industrial water by Stockton East as set forth in Paragraph 15. Such share shall be paid from the time the first payment becomes due regardless of whether all the municipal and industrial allocated water is in fact used for municipal and industrial purposes.

1S. "Municipal and industrial water" means water used for other than agricultural purposes.

1T. "New debt service" means the payments required to be made during each year, for principal, interest and other charges to the holders of any bonds which may be issued hereafter to finance expansion, additions to, or replacements of the water treatment facilities; and, in the event any bonds are issued to finance the acquisition, location or construction of Conveyance and Storage Facilities if any portion of the raw water conveyed or stored by such facilities is used by the Contractors as municipal and industrial water, new debt service shall include the municipal and industrial share of the payments required to be made during each year for principal, interest and other charges to the holders of such bonds.

1U. "New debt service surcharge" means an annual sum equal to the percentage of annual new debt service required as a surcharge by the controlling debt documents.

1V. "New Hogan Contracts" means the two contracts entered into under date of August 25, 1970, one between the United States of America and the Stockton and East San Joaquin Water Conservation District (now Stockton East) and the Calaveras County Water District, and the other between the Calaveras County Water District and the Stockton and East San Joaquin Water Conservation District (now Stockton East) which contracts together provide for a supply of water to Stockton East from New Hogan Dam.

1W. "New Hogan Dam" means the dam, reservoir and related facilities constructed in Calaveras County on the Calaveras River pursuant to the Act of Congress of December 22, 1944 (58 Stat. 887).

1X. "New Melones Contract" means that contract entered into under date of December 19, 1983, between Stockton East and the United States Department of the Interior, Bureau of Reclamation, by which Stockton East obtained the right to a portion of the supply of water developed by New Melones Dam, on an interim basis.

1Y. "New Melones Dam" means the dam, reservoir and related facilities constructed on the Stanislaus River pursuant to the Flood Control Acts of December 22, 1944 (58 Stat. 887) and October 23, 1962 (76 Stat. 1173).

1Z. "New Service Area" means an area not presently served by any of the Contractors.

1AA. "Nominal capacity" means the capacity of the water treatment plant to produce treated water under normal operating conditions. The water treatment plant construct-

ed pursuant to the plans and specifications described in subparagraph 5A of the Original Contract has a nominal capacity of 20,000 acre feet per year.

1BB. "North Stockton Aqueduct" means a pipeline extending from the water treatment plant to the approximate location of the intersection of Hammer Lane and Southern Pacific Railroad right-of-way in City, sufficient in size to serve that portion of the urban area north of the Calaveras River, together with a branch extending westerly along March Lane to El Dorado Street, and a branch extending westerly along Hammer Lane to West Lane.

1CC. "Noticed public hearing" means a public hearing held by the Board of Directors of Stockton East following at least 10 days notice given to each of the Contractors and further published at least once in a newspaper of general circulation published within Stockton East.

1DD. "Prime rate" means, during any year, the prime interest rate, as announced by the Bank of America, N.T.&S.A. or its successor, in effect on April 1 of that year for the best credit risks of said Bank or its successor.

1EE. "Parties" means all of the parties to this Second Amended Contract or as the parties may hereafter be modified by the addition or subtraction of one or more contractors.

1FF. "Produced water" means water extracted from the underground by Stockton East or water otherwise developed or made available by Stockton East and not purchased from another agency or entity.

1GG. "Raw water" means the supply of untreated water made available to the water treatment facilities.

1HH. "Raw water transmission line" means the pipeline constructed as a part of the water treatment facilities extending from the intake facilities at Bellota, San Joaquin County, California, to the water treatment plant.

1II. "Southern Water System" means that water supply and distribution system operated by San Joaquin County which provides municipal and industrial water to the Airport, AirMetro Industrial Park, and surrounding Airport facilities; San Joaquin General Hospital, the County Jail Complex and Juvenile Justice Center, three migrant labor camps, County facilities in the Mathews Road area, and such

other areas as may be added to the system from time to time by action of the Board of Supervisors.

1JJ. "Surplus Account" means the account having such name established and defined by the Bond Resolution.

1KK. "Treated water" means water processed by the water treatment plant or other water meeting the requirements of Paragraph 12 made available in accordance with this Second Amended Contract to the Contractors by Stockton East.

1LL. "Water Fund" means the fund having such name established and defined by the Bond Resolution.

1MM. "Water treatment facilities" means (a) the water treatment plant, (b) the raw water transmission line, (c) all related facilities constructed by Stockton East pursuant to bond authorization obtained at an election held on March 5, 1974, and pursuant to all statutory authority including, but not limited to, Sections 53540 and 53541 of the Government Code, as amended, and further in accordance with the plans and specifications described in subparagraph 5A, of the Original Contract, and (d) those measuring devices selected, installed and maintained by Stockton East pursuant to paragraph 11 of this Second Amended Contract; all as they have been constructed or installed pursuant to the Original Contract and as they may be expanded, added to, or replaced after the commencement of the term of this Second Amended Contract.

1NN. "Water treatment facilities advances" means the total sum of money Stockton East advanced under the Original Contract from funds other than the proceeds of the water treatment facilities bonds, to the cost of the water treatment facilities, namely, the sum of \$614,073.46, as set forth in the schedule attached hereto as Exhibit "C".

100. "Water treatment facilities bonds" means the bonds heretofore issued by Stockton East pursuant to the Revenue Bond Law of 1941.

1PP. "Water treatment plant" means the water treatment plant built by Stockton East generally in the vicinity of East Main Street and the Stockton Diverting Canal, near Stockton, San Joaquin County, California, as a part of the water treatment facilities, pursuant to the Original Contract, as such plant may be expanded, added to, or replaced after the commencement of the term of this Second Amended Contract.

100. "Year" means each 12-month period commencing on April 1 and ending on the next succeeding March 31.

2. TERM.

2A. Effective Date of Second Amended Contract. This Second Amended Contract shall be effective immediately upon its execution by the last of the parties hereto to execute said Contract except that for all purposes the provisions of the Original Contract shall continue to control until the North Stockton Aqueduct has been placed in service, at which time the terms of this Second Amended Contract shall become operative. Notwithstanding the previous sentence, City shall construct and place in service the North Stockton Aqueduct on or before October 31, 1988. This Second Amended Contract shall remain in effect until April 1, 2035.

2B. Replacement of Original Contract. This Second Amended Contract shall replace the Original Contract as soon as it shall take effect, except that where in this Second Amended Contract reference is made to provisions of the Original Contract, those provisions so referred to shall remain in effect. Those back sums referenced in Paragraphs 13 and 14 of the Original Contract shall continue to be due and shall be paid, until paid in full, as though the Original Contract were still in effect.

3. RENEWAL: CONTINUED SERVICE:

3A. Renewal: Each Contractor shall have the right, upon written notice to Stockton East given not less than six months prior to expiration of the initial or any renewal term of this Second Amended Contract, to extend the term of this Second Amended Contract for such term and upon such terms and conditions as Stockton East and the Contractor giving such notice shall agree upon in writing. Promptly after receipt of such notice Stockton East and such Contractor shall negotiate as to the terms and conditions of such renewal contract for such renewal term. The terms and conditions of any such renewal contract shall not be more favorable to one Contractor than those of any such renewal contract between Stockton East and another Contractor.

3B. Continued Service: After the expiration of the initial or any renewal term of this Second Amended Contract, each Contractor shall be entitled to continued service under the following conditions:

3B(1). Service of water in annual percentage amounts determined in accordance with the provisions set forth in Paragraph 4.

3B(2). Service of water shall be at charges to be mutually agreed upon by the parties, provided, however, that if such charges cannot be agreed upon, then service shall be continued at charges calculated in the same manner as applicable during the preceding initial or renewal term, as the case may be.

3B(3). Other terms and conditions of continued service shall be reasonable and equitable and shall be mutually agreed upon, provided, however, that if the parties cannot agree upon such other terms and conditions, continued service shall be in the manner and under all the terms and conditions applicable during the preceding initial or renewal term, as the case may be.

3B(4). If a Contractor shall have given Stockton East written notice of its election to enter into a renewal contract as provided in subparagraph 3A, and if upon expiration of the initial or extended term of this Second Amended Contract, as the case may be, the parties shall not have executed such renewal contract, then such Contractor shall be entitled to continued service under the provisions of this subparagraph 3B.

3C. One Contractor May Renew: The failure of one or more Contractors to enter into a renewal contract or to receive continued service pursuant to the provisions of subparagraph 3A or 3B, as the case may be, shall not prevent any other Contractor from exercising its right to enter into a renewal contract or to receive such continued service, as the case may be.

4. WATER TO BE FURNISHED TO THE CONTRACTORS:

4A. Obligation of Stockton East: Stockton East shall undertake all steps necessary to permit it to operate and maintain the water treatment facilities in order to meet the obligations of Stockton East under this Second Amended Contract. Stockton East shall only be excused from the performance of its obligations under this subparagraph 4A in the event of its performance being prevented by conditions beyond its control, such as, but not limited to an inability to raise sufficient funds to construct said water treatment facilities.

4B. Water to be Made Available: Subject to the provision of subparagraphs 4J, 4K, 4L and 5G, Stockton East

shall make available to the Contractors a minimum of 20,000 acre feet of treated water during each year of the term of this Second Amended Contract. Water shall be allocated among the Contractors in the following manner: Each Contractor shall have the right to take on a continuing monthly basis an amount of treated water equal to the current percentage applicable to such Contractor calculated by Stockton East in accordance with Paragraph 4H hereof multiplied by the aggregate amount of treated water delivered by Stockton East during such month. Nothing in this paragraph will prohibit any Contractor from taking more than its percentage of entitlement at any time to the extent that any other Contractor is not able to use its applicable percentage of entitlement. However, each of the parties hereto agrees to exert its best efforts to use its full proportional water entitlement and to cooperate to see that each Contractor, to the extent possible, receives its full entitlement, both in an energy-efficient and/or cost-effective manner.

4C. Emergency Conditions. In the event of the occurrence of an emergency or other condition beyond the control of a Contractor which requires such Contractor to use more than the percentage of treated water to which it is then entitled hereunder in order to meet the health or safety needs of its consumers, and in the event there is no unused treated water then available, the remaining Contractors ("Remaining Contractors") agree to make available on a temporary basis upon written request therefor from the Contractor so in need (the "Requesting Contractor"), sufficient water to meet such health or safety needs provided that the Requesting Contractor shall pay the Remaining Contractors within 60 days of written demand therefor any actual extra costs, including the cost of replacing the water so provided, and a 15% surcharge for overhead and administration, incurred by the Remaining Contractors by reason of making such treated water available to the Requesting Contractor. The Requesting Contractor shall diligently prosecute all reasonable corrective measures to restore full service independent of water so made available by the Remaining Contractors.

4D. Additional Water: To the extent Stockton East so determines, it will make available to Contractors through the water treatment facilities quantities of water in addition to the base supply of treated water annually. Such additional water shall be made available on a pro-rata basis to the Contractors in accordance with percentages currently allocated to each Contractor pursuant to this Paragraph 4. It is understood that the ability of Stockton East to deliver such additional water on a pro-rata basis

will be dependent upon various factors involving the combined operations of the water treatment facilities and the distribution systems of each of the Contractors. However, the parties agree that they shall together use their best efforts to permit the utilization of such additional water, as well as the base supply, on such pro-rata basis.

4E. Acceptance of Treated Water: The Contractors shall use their best efforts to accept treated water, including both the base supply under Paragraph 4B and any additional water under Paragraph 4D, made available to the Contractors to the extent of the physical capacity of the combined systems and the physical capacity of each Contractor to take and use such water at the times that it is made available, and each Contractor shall undertake all reasonable methods of operation necessary to permit the use of such water, rather than water pumped from the underground, within their respective systems when such water is made available, whether as a part of the base supply or as additional water. Each Contractor shall either construct necessary physical systems to facilitate the taking of water provided to it under this Second Amended Contract or shall arrange through wheeling agreements for the use of the physical systems of other Contractors. The City will construct and place in service the North Stockton Aqueduct (as defined herein) on or before October 31, 1988. Each of the parties hereto agrees to cooperate, to the extent feasible in the operation of its system, to the end that each Contractor receives its full entitlement of treated water in an energy efficient and/or cost effective manner, provided, however, that (unless otherwise mutually agreed) each Contractor shall bear its fair share of the cost of any joint use or jointly owned facility and the expense of operation and maintenance thereof. To this end, the Contractors shall, as necessary, enter into wheeling agreements, subject to all the provisions of this Second Amended Contract. In the event agreement as to the terms of any such wheeling agreement cannot be reached within ninety (90) days of opening of negotiations on any such wheeling agreement, any party to such wheeling agreement negotiation may initiate binding arbitration in accordance with the California Arbitration Act (Code of Civil Procedure §§1280 and following), with the following provisions: Each party shall appoint one arbitrator, who may be any person; the arbitrators so appointed shall appoint a neutral arbitrator, who may be any person and who shall be the sole decision-maker; the scope of arbitration shall be limited to the terms to be included in the wheeling agreement. Nothing in this Paragraph 4E contained shall, however, be deemed to obligate any Contractor to make its facilities, or any part thereof, available for use of any other Contractor unless

there is adequate capacity available in such facilities for such use of the second Contractor. No Contractor shall extend service to a new service area relying on the conveyance facilities of any other Contractor except by mutual agreement. No Contractor shall be under any obligation to dedicate all or any portion of its facilities to the use of any other Contractor hereunder. The foregoing provisions of this Paragraph 4E shall not limit the mutual undertakings of the Contractors set forth in Paragraph 4C to make water available on a temporary basis to a Requesting Contractor in the event of an emergency or other condition beyond the control of the Contractor.

4F. Scheduling of Maintenance: Any repairs, maintenance, replacement, or other work which will necessitate taking all or a portion of the water treatment facilities out of operation shall, to the extent practical, be undertaken each year between November and February, inclusive.

4G. Standard of Operation: Stockton East shall, at all times during the term hereof, operate and maintain the water treatment facilities in accordance with good and accepted waterworks practices.

4H. Calculation of Percentage: On or before September 1 of each year, each Contractor shall provide to Stockton East, in form designated by Stockton East, data, sufficient in Stockton East's determination, to enable Stockton East to calculate the total amount of water produced by that Contractor during the previous Year from all sources, whether from wells, Stockton East, or other providers or sources. On or before the October 1 next succeeding the provision of such data, Stockton East shall calculate for each Contractor a percentage determined by dividing the total amount of water produced by each Contractor, as calculated by Stockton East from the data provided to Stockton East, by the sum of such totals for all Contractors, and multiplying by 100. Such percentage so determined for each Contractor shall be the percentage applicable for each Contractor respectively in accordance with paragraphs 4 and 5, for the Year next succeeding such calculation and Stockton East shall promptly notify the Contractors of each such percentage. Stockton East's determination of the percentages shall be final.

4I. Minimum Amount: Notwithstanding any other provision of the Original Contract or of this Second Amended Contract, in consideration of the consent by Cal Water to a reduction in its minimum allocation of 18,500 acre feet of treated water yearly from the existing 20,000 acre feet nominal capacity of the water treatment plant set forth in

the Original Contract to an amount based on its total water production from all sources as a percentage of all Contractors' total water production from all sources as determined in Paragraph 4 hereof, Stockton East hereby agrees to deliver to Cal Water (on a monthly basis) during each Year a minimum of not less than one-half of the total treated water available for delivery to all Contractors. The Contractors other than Cal Water hereby agree and consent to such agreement by Stockton East regardless of whether, as a result of such deliveries to Cal Water pursuant to such agreement, the amount of treated water delivered to such other Contractors, or any of them, during any Year may be less than the amount determined under Paragraph 4B by use of the applicable percentage determined under Paragraph 4H hereof and regardless of whether the amount of treated water may be insufficient in any Year to meet the allocation of such other Contractors so determined under Paragraph 4B by use of the applicable percentage determined under Paragraph 4H after first meeting the allocation of Cal Water. After so meeting such allocation of Cal Water, the remaining treated water shall be allocated on a pro-rata basis among such other Contractors based on their respective applicable percentages determined under Paragraph 4H. The provisions of this Paragraph shall remain in effect until Conveyance and Storage Facilities have been constructed which deliver to the water treatment plant raw water sufficient in amount to increase the annual nominal capacity of that plant from 20,000 acre feet to 30,000 acre feet.

4J. Lack of Availability of Raw Water: Subject to subparagraph 5G, Stockton East shall be excused from its obligation to deliver annually a minimum of 20,000 acre feet of treated water, without Contractors being excused from making their respective payments to Stockton-East required by this Second Amended Contract during any Year in which there is available to Stockton East, from all sources, less than a total for all uses of 20,000 acre feet of raw water. In such event Stockton East shall during such a Year deliver as much water as it does have available but shall have no liability for its failure to deliver more.

4K. Failure of System to Accept Water: Subject to subparagraph 5G, Stockton East shall also be excused from its obligation to deliver a minimum of 20,000 acre feet of water in any Year during which the combined systems of Contractors fail to accept a full 20,000 acre feet of water due to operational or physical limitations and in such event Stockton East shall deliver as much water as is operationally possible but shall not be obligated to deliver the full 20,000 acre feet of water during such a Year, and in

such event the Contractors shall not be excused from making their respective payments to Stockton, East required by this Second Amended Contract.

4L. Inability to Deliver Treated Water: Subject to subparagraph 5G, Stockton East shall also be excused from its obligation to deliver water without the Contractors being excused from payment during any period, not exceeding 18 months, of failure by Stockton East to deliver treated water for any reason. In the event of a failure by Stockton East to deliver treated water to Contractors, then to the extent practical and to the extent of the capacity of the water treatment facilities, the availability of raw water, and the ability of Contractors' systems to accept water, Stockton East shall subsequently during the Year of such a failure, make up any quantity required to be delivered as a part of the base supply of treated water.

4M. Allocation of Deficiency: Any deficiency resulting due to conditions mentioned in subparagraphs 4J, 4K and 4L shall be allocated among the Contractors on a proportional basis in accordance with the percentages currently allocated to each Contractor pursuant to this Paragraph 4.

5. PAYMENT BY CONTRACTORS.

5A. Amount to Be Paid Annually: In exchange for Stockton East agreeing to make available to Contractors treated water in the manner set forth in Paragraph 4 and otherwise operating in accordance with this Second Amended Contract, the Contractors together shall pay annually, in equal monthly installments estimated, computed, and paid as set forth in Paragraph 6, to Stockton East, regardless of the amount of water actually delivered to Contractors and regardless of whether any water is delivered at all, subject to subparagraph 5G, the sum of the following:

5A(1). Debt service and the debt service surcharge for the subject Year together with 30 equal annual payments calculated to amortize the total water treatment facilities advances with interest at the average interest rate applicable to the water treatment facilities bonds, provided, that, there shall be deducted from the amount of the water treatment facilities advances the aggregate of the sums which have been applied to the water treatment facilities advances either directly from the proceeds of the water treatment facilities bonds or from sums made available pursuant to Paragraph 4 of the Original Contract.

5A(2). New debt service and the new debt service surcharge.

5A(3). A sum equal to the aggregate of the following:

(a) the cost of expansion of, additions to, or replacements of, the water treatment facilities,

(b) the municipal and industrial share of the cost of acquisition of supplemental surface water from any source other than New Hogan Dam, and

(c) the municipal and industrial share of the cost of construction and acquisition of Conveyance and Storage Facilities, less the aggregate of all payments on account of such costs heretofore made by the Contractors, and plus interest at the prime rate for one Year on the remaining balance of such costs, divided by the number of Years remaining in the term of this Second Amended Contract, provided, however, that those costs itemized in the preceding clauses (a), (b) and (c) shall be included only if and to the extent that they have not been financed by the issuance of bonds and/or paid for from reserves established and maintained by Stockton-East pursuant to the provisions of the Bond Resolution, the Original Contract or this Second Amended Contract.

5A(4). The annual adjusted price of the raw water delivered to the water treatment plant including both the base supply of raw water and any additional water which may be delivered to and accepted by the Contractors. The adjusted price of raw water shall be determined annually for each applicable Year as follows:

5A(4)(a). From the total actual cost of all water purchased in any Year by Stockton East there shall be deducted any charges of any kind imposed by a purveyor of raw water to Stockton East on the use or required scheduling of municipal and industrial water, as opposed to agricultural water.

5A(4)(b). The amount so obtained pursuant to subparagraph 5A(4)(a) shall then be multiplied by a fraction, the numerator of which shall be the amount of raw water delivered to the water treatment plant during the year and the denominator of which shall be all water purchased or produced by Stockton East during the year. For purposes of the denominator, water shall be measured as follows:

5A(4)(b)(i) Water purchased from New Hogan Dam shall be the amount of water released from New Hogan

Dam less the amount of water diverted within Calaveras County as such diversions within Calaveras County are measured or determined from time to time by agreement between Stockton East and the Calaveras County Water District.

5A(4)(b)(ii) In measuring surface water from sources other than New Hogan Dam the water shall be measured at the point at which such water is measured for purposes of payment by Stockton East to the purveyor of such water.

5A(4)(b)(iii) Produced water shall be measured at the point of production.

5A(4)(c). It is understood by the parties that the provisions of this subparagraph 5A(4) shall not be deemed to control the present or future agricultural water rates or charges of Stockton East.

5A(4)(d). To the amount so obtained there shall then be added, in order to obtain the adjusted price of raw water, all charges, of any kind imposed by a purveyor of raw water to Stockton East on the use or required scheduling of municipal and industrial water as opposed to agricultural water, but excluding any minimum payments made for municipal and industrial water not used in order to make such water available in the future, but including interest charges payable by Stockton East under the New Hogan Contracts, the New Melones Contract, or any other contract for the purchase of raw water by Stockton-East in the future.

5A(4)(e). In the event that in the future water is delivered by Stockton East to water treating facilities in addition to the water treatment plant, then the adjusted price for raw water shall be calculated for all water delivered to water treating facilities and shall then be apportioned among the various water treating facilities on an equal per acre foot basis.

5A(5). The actual operation, maintenance, repair and replacement costs directly attributable to the water treatment facilities for the annual production of the base supply of treated water less sums drawn against the Repair and Replacement Reserve Account pursuant to the provisions of Paragraph 8 of the Original Contract. It is understood that no item for depreciation shall be included in the sums calculated and paid pursuant to Paragraphs 5 and 6.

5A(6). An amount equal to the actual cost of administrative services attributable to the operation of the water treatment facilities and the administration of this Second

Amended Contract including, but not limited to, management time and required legal, accounting, and consulting engineering services, and the actual cost of paying agents or other services which Stockton East requires in processing and making payments on the water treatment facilities bonds, or any other related bonds.

5A(7). The actual cost of insurance for the water treatment facilities, and Conveyance and Storage Facilities, including, but not limited to, casualty and liability and including fire, and extended coverage, at full replacement value, but excluding "loss of revenue" insurance.

5A(8) A sum equal to the actual cost of operation, maintenance, and repair of the wells, pumps, conduits, and related facilities enumerated in Paragraph 8, including both costs arising on account of actual operation and costs arising on account of necessary standby facilities for use in future Years when such production facilities may be required.

5A(9) The annual payments required by Paragraphs 7 and 8 into the reserve funds established by Paragraphs 7 and 8.

5A(10) The sum of \$100,000, to be paid into the Water Treatment Facilities Reserve Fund established by Paragraph 9; said sum of \$100,000 to be adjusted from time to time by Stockton East, provided that:

5A(10)(a) Prior to any initial or subsequent adjustment in said sum of \$100,000, Stockton East shall obtain a written report, or reports, from one or more registered civil engineers as to the need for funds to meet expenditures described in subparagraph 9C.

5A(10)(b) Prior to any initial or subsequent adjustment upward in said sum of \$100,000, the Board of Directors of Stockton East shall hold a noticed public hearing to consider such upward adjustment.

5A(10)(c) Said sum of \$100,000 shall in no event be reduced below \$100,000 and shall only be adjusted above \$100,000 for the purpose of meeting expenditures described in subparagraph 9C.

5B. Credit: Against the sums due under subparagraph 5A there shall be allowed as a credit, a sum calculated in a manner established by resolution of the Board of Directors of Stockton East for the use of the raw water transmission line and intake facilities for delivery of water to

users and uses other than the water treatment plant; provided that prior to initially adopting or thereafter altering said method of calculation the Board of Directors of Stockton East shall first hold a noticed public hearing relative to such method of calculation.

5C. Audit: The annual amount of operations, maintenance, repair and replacement, the cost of necessary and desirable improvements, and modifications to the treatment facilities, the cost of acquisition of surface water from any source other than New Hogan Dam, the cost of construction of Conveyance and Storage Facilities and the cost of necessary and desirable improvements and modifications thereto, the cost of administrative services, charges for raw water, and the amount of all other variable costs, charges, credits, and funds shall be determined each year by Stockton East and thereafter audited and reported upon by an independent certified public accountant selected by Stockton East as set forth in subparagraph 6C.

5D. Allocation of Charges: The charges imposed by this Paragraph 5 shall be allocated among the contractors annually in proportion to the percentage currently allocated to each contractor pursuant to Paragraph 4.

5E. Payment Adjustments: Notwithstanding any other provision of this Second Amended Contract, City shall pay an estimated sum of \$5,856,586 and Lincoln Village and Colonial Heights Maintenance Districts combined shall pay an estimated sum of \$582,690 to Stockton East as consideration for the purchase of water entitlements, which entitlements had been previously allocated under the Original Contract to Cal-Water. The sums shall be paid in equal monthly installments commencing at the date the Second Amended Contract becomes operative and extended thereafter for 15 years.

As and for consideration to Cal Water to terminate the Original Contract and enter into the Second Amended Contract, the base monthly payment which Cal Water would otherwise be obligated to pay under this Paragraph 5 shall be reduced by an estimated sum of \$6,439,276 which credit shall be applied in equal monthly installments on a monthly basis during each month commencing at the date the Second Amended Contract becomes operative and extended thereafter for 15 years. The above-mentioned estimated sums shall be adjusted to the actual amounts applicable to each Contractor as of the date that the North Stockton Aqueduct is placed in service, in accordance with Paragraph 2A of this Second Amended Contract. Such actual amounts shall be determined by Stockton East.

Notwithstanding any other provision of this Second Amended Contract to the contrary, Lincoln Village and Colonial Heights Maintenance Districts shall make payment to Stockton East solely on the basis of a charge per acre foot of water computed by Stockton East to be applicable to the Lincoln Village and Colonial Heights Maintenance Districts for their allocation of surface water as computed under Section 4H, which charge shall be equal to the unit cost per acre foot payment made by any other Contractor pursuant to the payment provisions within this Second Amended Contract with the exception of payments made under Section 5E. The payment of the charge will be made on a monthly basis.

5F. Further Adjustments: It is agreed that in the year 2016, and each tenth (10th) Year thereafter, the contractors will review the payment of capital costs with bonded indebtedness as compared to water allocation and make such adjustments to future payments as appropriate to adjust any inequities.

5G. Failure to Continue Service: Following any period of 18 months during which Stockton East fails to make available to Contractors at least 7,500 acre feet of treated water, the Contractors shall be excused from making the payments required pursuant to this Second Amended Contract until such time as Stockton East is prepared to, and has, restored the normal service contemplated by this Second Amended Contract. In the event of any failure of the raw water supply, damage or destruction of all or a portion of the water treatment facilities, or any other cause preventing Stockton-East from making available to Contractors the quantities of water contemplated by this Second Amended Contract, Stockton East shall use its best efforts to restore full service promptly. In the event of damage to or destruction of the water treatment facilities, any insurance proceeds shall be applied to repair and reconstruction. In the event that all or a portion of the water treatment facilities are taken or damaged by condemnation by, or conveyed by Stockton East to avoid or compromise any condemnation proceeding to, a public agency not assuming the obligations of this Second Amended Contract, then Stockton-East shall use any proceeds from such a condemnation or conveyance in the manner required by the Bond Resolution.

6. TIME AND MANNER OF PAYMENT:

6A. Monthly Payments: Payment of the annual sum due pursuant to Paragraph 5 shall be as set forth in this Paragraph 6. There shall be a base monthly payment made as set

forth in this Paragraph 6. Payment shall be made monthly on the first day of each month.

6B. Proration: During the term of this Second Amended Contract payments which cover less than a full month or which cover less than a full Year's service shall be prorated accordingly.

6C. Procedures for Audit: Actual and variable costs and other items subject to audit shall be audited and reported upon by an annual audit as set forth in subparagraph 5C. The audit shall be commenced each Year not later than July 1 next following the close of each Year. The annual audit shall be completed not later than December 31 succeeding the close of the Year being audited. Each audit shall cover a full Year commencing on April 1 and ending on March 31. In the event that an annual audit discloses a necessary adjustment or correction in any amount or fund, then such adjustment or correction shall be applied to the base monthly payment to be paid during the Year next succeeding the completion of such an annual audit. Three copies of the annual audit report shall be furnished to each Contractor without expense promptly after receipt by Stockton East.

6D. Establishing Base Monthly Payment. The base monthly payment shall be calculated annually as follows:

6D(1) On or before the first day of October annually Stockton-East shall announce a new base monthly payment to be applicable during the next succeeding Year.

6D(2) The base monthly payment which shall be announced annually pursuant to subparagraph 6D(1) shall be an estimate, which estimate shall be made by Stockton East to include the following:

6D(2)(a) Debt service, the debt service surcharge, new debt service, new debt service surcharge, and any payment toward water treatment facilities advances required by subparagraph 5A(1) for the subject Year and for costs established in subparagraph 5A(3).

6D(2)(b) A sum based on an estimate of the actual cost of variable items as anticipated for the forthcoming Year during which said base monthly payment will be applicable. The estimate so made is to be made following a survey of current and anticipated costs of the subject items and in consideration of information disclosed by the last available required audit and records of Stockton East for the immediately preceding Year.

6D(2)(c) The application of any credit which it is estimated may be due the Contractors.

6D(2)(d) A sum necessary to make any corrections because of overpayments or underpayments arising because of variance between estimates and actual experience during the preceding Year and any corrections or adjustments disclosed as necessary by the last available audit.

6D(2)(e) A deduction for all sums collected pursuant to Paragraph 6D(3), for the previous year, in excess of that amount required for the groundwater production fund, as determined by Stockton East.

6D(3) Stockton East shall annually levy a municipal groundwater assessment, pursuant to its enabling legislation such that the cost of groundwater use is equivalent to the cost of surface water use. That portion of such assessment which is deducted pursuant to paragraph 6D(2)(e) shall be paid to meet costs set forth in paragraph 6D(2)(a) and 6D(2)(b).

6E. Public Hearing On Base Monthly Payment: Annually prior to announcing the base monthly payment for the next Year the Board of Directors of Stockton East shall hold a noticed public hearing to consider the amount of said base monthly payment.

6F. Final Payments: During the 12 months next following the availability of the audit of the last 12 months preceding the cessation of service pursuant to this Second Amended Contract, and any extension, continuation, or renewal thereof, 12 final monthly payments shall be made which together shall adjust any differences among the parties between the last base monthly payment and actual experience during the last 12 months as confirmed by audit of operations for the last 12 months.

7. REPAIR AND REPLACEMENT RESERVE ACCOUNT:

7A. Maintenance of Repair and Replacement Reserve Account: Stockton East has established and shall maintain during the term of this Second Amended Contract a reserve account for the purpose of covering the cost of repairs and replacement of items scheduled pursuant to subparagraph 7B which are required during the life of the Second Amended Contract in order to maintain the water treatment facilities in good order and at all times able to meet efficiently the production of the water to be supplied pursuant to this Second Amended Contract. The account identified in

this Paragraph 7 is the same as the Repair and Replacement Reserve Account established by the Bond Resolution.

7B. Amount of Annual Payment: There is attached hereto as Exhibit "D" a major repair and replacement schedule which schedule has been prepared with the assistance of the engineers who designed the water treatment facilities and which sets forth an estimate of such anticipated major repair and replacement expenses during the life of the Second Amended Contract and the amount of level annual payments sufficient to provide a reserve account adequate to meet the expenses anticipated by said schedule.

7C. Adjustment of Payment and Use of Account: Payment shall be made by the Contractors annually as a part of the total payment required by Paragraph 5 into the Repair and Replacement Reserve Account in accordance with the payment schedule established by Exhibit "D". Payments to be made into the reserve fund shall be adjusted from time to time, by Stockton East to meet actual operating experience, provided that prior to any such adjustment the Board of Directors of Stockton East shall first hold a noticed public hearing. Any sums drawn against the Repair and Replacement Reserve Account shall be deducted from the actual charge for operation, maintenance, and replacement made pursuant to subparagraph 5A(5).

8. WATER DEFICIENCY RESERVE FUND: It is recognized that pursuant to the New Hogan Contracts Stockton East in some years may be required to take a 25% deficiency in its New Hogan Dam water supply. In order to furnish Contractors with a minimum of a full 20,000 acre feet of water per year Stockton East agrees that it will purchase water, or construct, install, or acquire such wells, pumps, conduits, and related facilities as may from time to time be required to permit Stockton East to take such water from the underground annually as may be necessary to augment an annual deficiency of as much as 25% in the base supply of raw water. In order to place itself in a position to meet the obligations of this Paragraph 8 Stockton East has established a Water Deficiency Reserve Fund into which it shall deposit annually a sum set by the Board of Directors of Stockton East. The amount so deposited shall not in any Year exceed an amount equal to ten cents multiplied by the total number of acre feet of water delivered to the water treatment plant during the subject Year. Funds in said Water Deficiency Reserve Fund may be applied by Stockton East at such time as Stockton East may from time to time determine is appropriate to the construction or other acquisition of such wells, pumps, conduits, and related facilities, and to do any other acts necessary on the part of

Stockton East in its judgment to furnish the base supply of treated water to Contractors annually. In the event that during the term hereof Stockton East by act of the California legislature is granted special powers to levy taxes or assessments for the purposes specified herein and such taxes or assessments are applicable to the treated water which is the subject of this Second Amended Contract, then this Paragraph 8 shall be inapplicable and of no force and effect.

9. WATER TREATMENT FACILITIES RESERVE FUND: Stockton East has established and shall maintain during the term of this Second Amended Contract a Water Treatment Facilities Reserve Fund. There shall be deposited in that fund at the end of each Year the sums paid to Stockton East pursuant to subparagraphs 5A(10). Stockton East may, at any time, make withdrawals from said Water Treatment Facilities Reserve Fund and expend such funds as Stockton East determines, provided that such expenditures are limited to the following purposes:

9A. Debt Service: Debt service, including the call and redemption of bonds prior to fixed maturity date.

9B. Operation and Maintenance: Operation, maintenance, and repair of the water treatment facilities including the items listed in subparagraphs 5A(4) through 5A(8).

9C. Replacement and Expansion: Necessary or desirable replacement, expansion, improvement, modification, and increase in the capacity of the water treatment facilities.

10. SCHEDULING OF WATER: From time to time as is necessary and convenient, and at least once each year during the month of March representatives of the Contractors and Stockton East shall meet and confer as to available raw water and the scheduling of the delivery of treated water to the Contractors. Following such conferences Stockton East shall, from time to time announce schedules for the delivery of treated water to Contractors and to each Contractor. The schedules so announced, from time to time, shall be developed in a manner to permit making maximum use of the treated water which may be available subject to the respective demands of Contractors' systems. It is also understood that schedules announced pursuant to this Paragraph 10 shall be goals toward which Stockton East and the Contractors shall work in operating the water treatment facilities and the respective distribution systems of Contractors, but it is understood that such goals may not in every instance be achieved.

11. MEASUREMENT: Necessary measurement of water to permit compliance with this Second Amended Contract shall be by recording measuring devices selected by Stockton East and installed and maintained by Stockton East and subject to inspection at all times by the Contractors.

12. QUALITY: Stockton East has obtained and shall maintain in effect during the term of this Second Amended Contract a permit to operate the water treatment facilities from the California Department of Health Services. At all times Stockton East will use its best efforts to the end that the quality of water delivered by it pursuant to and in satisfaction of this Second Amended Contract meets or exceeds requirements as to water for human consumption of the Department of Public Health of the State of California, the United States Environmental Protection Agency and their respective successors. The Contractors shall likewise use their best efforts to meet or exceed such requirement with respect to water delivered by the Contractors to their respective customers or users.

13. OTHER CONTRACTORS: It is recognized that another Contractor, not a party hereto at this time, could take water. The parties hereto agree that no such Contractor shall be furnished water on terms more favorable than those made available to the Contractors at the date such a new Contractor agrees to take water and to be bound by this Second Amended Contract. No additional Contractors will be added to this Second Amended Contract without the express written consent of all the existing Contractors, which consents shall not be unreasonably withheld. Notwithstanding the provisions herein, the Southern Water System may become a Contractor under this Second Amended Contract, upon written notice to the other parties hereto.

14. OPERATIONS: Stockton East shall at all times make all reasonable efforts to operate the water treatment facilities in a manner in accordance with the currently applicable schedule adopted as set forth in Paragraph 10. In so operating Stockton East will endeavor to meet the full water demand of the systems of the Contractors during periods of low demand. During periods of high demand it is understood that all systems may be required to operate ground water pumps in order to meet peak loads. Water will be delivered into the systems of Contractors by delivery to Cal Water at the point shown on Exhibit "B". Such water delivery points may later be changed, and new delivery points may be created.

15. CONSTRUCTION OF NEW FACILITIES: The parties recognize that in order to meet the increased demand for treated

water in the Stockton Metropolitan Area it will be necessary for Stockton East to acquire water from sources other than New Hogam Dam and in order to transport such water to the water treatment facilities it will be necessary to construct Conveyance and Storage Facilities. The cost of acquiring such additional water, the cost of the Conveyance and Storage Facilities, and the respective agricultural share and municipal and industrial share of such costs are presently unknown. Since the Contractors will be the parties ultimately responsible for payment of such municipal and industrial share, the engineering feasibility of such project and the cost thereof are matters of vital interest to them. Accordingly, Stockton East agrees that it will consult with the Contractors on any such proposed acquisition or construction, together with engineering details and details as to the cost thereof, the municipal and industrial share of all such costs to be allocated to the Contractors, the proposed financing plan, the financial impact on the Contractors, and other pertinent aspects of the overall project. If all Contractors approve the plan in writing, then Stockton East may proceed in accordance with law. If any Contractor shall not approve within thirty days of a request for approval by Stockton East, the proposed plan shall be submitted to a vote of the electors of Stockton East, and the results of such vote shall be final and binding on all Contractors.

16. ATTORNEYS FEES AND COSTS: In any case where court action is instituted by one or more parties against one or more other parties to interpret this Second Amended Contract, the rights of the respective parties hereunder, or to enforce a right or obligation created by this Second Amended Contract, the prevailing party or parties shall receive costs and reasonable attorneys fees to be set by the court.

17. SUCCESSORS: This Second Amended Contract shall bind and inure to the legal successors of the parties and is not made for the benefit of any other parties. Any Contractor may assign all or any part of this Second Amended Contract to a public agency having the power of eminent domain. In the event of any such assignment of all of a Contractor's interest in this Second Amended Contract, the Contractor so assigning shall be relieved from all further obligations under this Second Amended Contract. In the event of such an assignment of a part of a Contractor's interest under this Contract the Contractor so assigning shall remain obligated for the remainder of its obligations under this Second Amended Contract.

18. DEFAULT AND REMEDIES:

18A. Interest: Any sum due hereunder and not paid when due shall bear interest at the prime rate until paid in full.

18B. Remedies: If any Contractor shall fail to cure or correct any default, including, but not limited to payment of any sum when due, then following 10 days written notice of such default to the defaulting Contractor, Stockton East shall have, without further notice or demand and without one remedy excluding any other, all remedies at law, in equity, or as set forth below:

18B(1). The discontinuance of service until the default is remedied and in the event of such a discontinuance of service Contractor shall continue to be liable for the accrual of the base monthly payment or payments accruing during such period of discontinued service. In the event of a discontinuance of service to any Contractor, written notice of such cessation shall be given by Stockton East to all of the Contractors and, if discontinuance of service requires a cessation of wheeling, the Contractors providing wheeling shall cease wheeling, and Stockton East shall, and hereby agrees to, hold harmless and indemnify any Contractor from liability which might arise following such a written notice of the cessation of wheeling.

18B(2). The collection by suit of any sums due, it being understood that the collection by suit of any sums due shall not waive or terminate a Contractor's continuing obligation to make all required payments to Stockton East.

19. NOTICES: Notices required or permitted to be given under this Second Amended Contract shall be made by all parties as provided herein. Mail shall be deposited in a United States Post Office mail box first class postage prepaid addressed as shown by the respective addresses following the signature block for each of the parties hereto. Notices so posted shall be deemed delivered on the second day following said posting. Changes in these addresses shall be given in writing by the method specified herein.

20. SUBJECT TO BOND RESOLUTION: This Second Amended Contract and the relationship between Contractors and Stockton East, and the respective obligations and privileges of each of the parties shall, in all respects, be subject to and bound by the Bond Resolution. In the event of any conflict between the Bond Resolution and this Second Amended Contract the Bond Resolution shall prevail.

21. SPECIFIC PERFORMANCE: By reason of the specialized nature of the water service to be rendered, and for the further reason that the extent of any damage caused to any party by another by reason of any breach of this Contract may be extremely difficult to determine, it is agreed by the parties hereto that an action for damages is an inadequate remedy for any breach, and that specific performance, without precluding any other remedy available in equity or at law, will be necessary to furnish any party hereto with an adequate remedy for the breach by any other party hereto of any covenant or obligation for the benefit of the aggrieved party.

22. SEVERABILITY: If any term, provision, covenant, or condition of this Second Amended Contract is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remainder of the provisions shall remain in full force and effect and shall in no way be affected, impaired or invalidated.

23. ENTIRE AGREEMENT: This instrument constitutes the sole and only agreement of the parties hereto relating to the rights and obligations granted and assumed herein. Any prior agreements, promises, negotiations, or representations not expressly set forth in this Second Amended Contract are of no force or effect, except as set forth in paragraph 2B of this Second Amended Contract.

24. REMEDIES NOT EXCLUSIVE: Any remedy granted to a party by this Second Amended Contract is not exclusive and any party may elect any remedy granted by this Second Amended Contract, or otherwise, at law, by statute, or in equity, or any combination thereof.

25. WAIVER: No waiver of any default shall constitute a waiver of any other breach or default, whether of the same or any other term, covenant, or condition. No waiver, benefit, privilege, or service voluntarily given or performed by either party shall give the other any contractual right by custom, estoppel, or otherwise. The subsequent acceptance of any payment pursuant to this Second Amended Contract shall not constitute a waiver of any preceding default by any party other than default in the payment of the particular payment so accepted, regardless of a party's knowledge of the preceding breach at the time of accepting the payment.

26. TITLES: The table of contents of this Second Amended Contract and the captions of the various articles and paragraphs of this Second Amended Contract are for convenience and ease of reference only and do not define,

limit, augment, or describe the scope, content, or intent of this Contract or of any part or parts of this Second Amended Contract.

27. GENDER, NUMBER: The neuter gender includes the feminine and masculine, the masculine includes the feminine and neuter, and the feminine includes the masculine and neuter, and each includes corporation, partnership, or other legal entity when the context so requires. The singular number includes the plural and the plural the singular whenever the context so requires.

28. AMENDMENT: This Second Amended Contract may only be amended by agreement of all the parties.

29. CONTROVERSIES: No dispute or controversy between any two or more of the parties hereto shall affect the rights of any party or parties not involved in such dispute or controversy.

30. INTEREST RECEIVED ON RESERVE FUNDS: All interest income received by Stockton East by virtue of the investment of funds on hand in any reserve fund or account to the extent any such fund is funded out of payments made pursuant to this Second Amended Contract, shall be added to the respective reserve fund generating such interest and shall be expended for the purposes of such reserve fund.

31. MODIFICATION OF BOND RESOLUTION: There shall be no modification of the Bond Resolution nor the adoption of a supplemental or additional resolution which affects the obligations of any Contractor or increases or changes their respective payment obligations without the prior written consent of each Contractor.

32. SUBJECT TO UNITED STATES BUREAU OF RECLAMATION CONTRACTS: It is understood that this Second Amended Contract and the rights and obligations of the parties hereunder are subject to the terms of the New Hogan Contracts and the New Melones Contract and by execution hereof each of the Contractors agrees to be bound by the provisions of said contracts, including, but not limited to, the provisions of Article 32 of the contract entered into under date of August 25, 1970 between the United States of America and the Stockton and East San Joaquin Water Conservation District (now Stockton East) and the Calaveras County Water District, and Article 17 of the New Melones Contract and pursuant to the provisions of subdivision (g) of said Article 32 and of subdivision (7) of said Article 17, the provisions of subdivision (a) through (g) of said Article 32 and of said Article 17 are hereinafter set forth:

EQUAL OPPORTUNITY

32. During the performance of this Contract, the Districts agree as follows:

(a) The Districts will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Districts will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Districts agree to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this Equal Opportunity clause.

(b) The Districts will, in all solicitations or advertisements for employees placed by or on behalf of the Districts, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(c) The Districts will send to each labor union or representative of workers with which they have a collective bargaining agreement or other Contract or understanding, a notice, to be provided by the agency Contracting Officer, advising the labor union or workers' representative of the Districts' commitments under this Equal Opportunity clause, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Districts will comply with all provisions of Executive order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(e) The Districts will furnish all information and reports required by said Executive Order and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to their books, records, and accounts by the contracting agency and the Secretary of Labor for purpose of investigation to ascertain compliance with such rules, regulations and orders.

(f) In the event of the Districts' noncompliance with the Equal Opportunity clauses of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part, and the District declared ineligible for further Government contracts in accordance with procedures authorized in said Executive Order, and such other sanctions may be imposed and remedies invoked as provided in said Executive Order, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(g) The Districts will include the provisions of subdivisions (a) through (g) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of said Executive Order so that such provisions will be binding upon each subcontractor or vendor. The Districts will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, That in the event the Districts become involved in, or are threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the Districts may request the United States to enter into such litigation to protect the interests of the United States.

EQUAL OPPORTUNITY

17. During the performance of this Contract, the Contractor agrees as follows:

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.

(2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without discrimination because of race, color, religion, sex, or national origin.

(3) The Contractor will send to each labor union or representative of workers, with which it has a collective bargaining agreement or other Contract or understanding, a notice, to be provided by the Contracting Officer, advising the said labor union or workers' representative of the Contractor's commitments under Section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The Contractor will furnish all information and reports required by said amended Executive Order and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the Contracting Officer and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended, in whole or in part, and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in said amended Executive Order, and such other sanctions may be imposed and remedies invoked as provided in said Executive Order, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The Contractor will include the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of said amended Executive Order, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will

take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, That in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

Stockton East covenants and agrees to perform all of its obligations under the provisions of said Article 32 and of said Article 17.

33. CONDUCT OF PUBLIC HEARINGS: Whenever Stockton East is required by this Second Amended Contract to hold a noticed public hearing such noticed public hearing may be consolidated with any other noticed public hearing required by this Second Amended Contract. A notice of a public hearing required by this Second Amended Contract need not set forth in detail the item or items to be considered but will be sufficient if it describes generally the subject matter to be considered at the public hearing.

34. ADJUDICATION OF GROUND WATER BASIN: In the event of a future adjudication of rights to extract water from the ground water basin underlying Stockton East, the parties agree and stipulate among themselves that use of water delivered under this Second Amended Contract shall constitute a reasonable beneficial use of ground water to the extent that such use results in a reduction in ground water extraction below the level of such extraction prior to the initial delivery date. The parties further agree that in the event of an adjudication, the respective positions they assert, whether in judicial proceedings or stipulated settlement, will be in accordance with the provisions of this Paragraph 34.

35. STOCKTON EAST AS CONTRACTOR: In the event that while service is continued hereunder to any Contractor Stockton East undertakes, by purchase, other acquisition, or by contract, the operation of all or any part of the distribution system of any Contractor, then in such capacity, as the operator of a distribution system, Stockton East shall not extend to such a system or the water users of such a system any benefit, right, or preference, not extended to the other Contractors, unless such benefit, right, or preference is also extended to all other Contractors.

36. TEMPORARY USE OF FUNDS: In the event that during any year Stockton East has a shortage of funds to meet

anticipated or unanticipated costs and charges arising under subparagraphs 5A(4) through 5A(8) then Stockton East may, in its discretion, use any funds it may have on hand in the Water Treatment Facilities Reserve Fund for such purposes. In the event that Stockton East does use funds in the Water Treatment Facilities Reserve Fund pursuant to the preceeding sentence, then Stockton East may withdraw from the Surplus Account at the end of the current Year, and at the end of any necessary succeeding Years, sufficient funds to reimburse the Water Treatment Facilities Reserve Fund for the money used pursuant to this Paragraph 36 from the Water Treatment Facilities Reserve Fund.

37. ALLOCATION OF SURPLUS TO WATER FUND: At the time of setting the amount of the annual payments to be made by the Contractors pursuant to Paragraphs 5 and 6, an estimate shall be made of that amount of money which will remain in the Surplus Account at the end of the current Year which will be in excess of the amount required to meet all allocations and payments to Stockton East in the current Year provided for by Paragraphs 8, 9 and 36, and subparagraph 5A(1). The sums to be paid by the Contractors pursuant to Paragraphs 5 and 6 for the coming Year shall be reduced by such amount estimated to be remaining in the Surplus Account. At the end of the current Year, all moneys remaining in the Surplus Account which are in excess of the amounts required to meet all allocations and payments to Stockton East provided for by Paragraphs 8, 9 and 36 and subparagraph 5A(1) for such current Year shall be deposited in the Water Fund and used as therein provided.

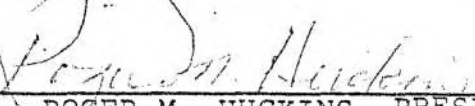
38. RESOLUTIONS AND EXECUTION: There are attached hereto the following: as Exhibit "E" a certified copy of a resolution of the Board of Directors of Stockton East authorizing execution of this Second Amended Contract; as Exhibit "F" a certified copy of a resolution of the Board of Directors of Cal-Water authorizing execution of this Second Amended Contract; as Exhibit "G" a certified copy of a resolution of the City Council of City authorizing execution of this Second Amended Contract; as Exhibit "H" a certified copy of a resolution of the Board of Supervisors of the County of San Joaquin acting on behalf of Lincoln authorizing execution of this Second Amended Contract; and as Exhibit "I" a certified copy of a resolution of the Board of Supervisors of San Joaquin County acting on behalf of Colonial authorizing execution of this Second Amended Contract. The parties shall execute ten originals of this Second Amended Contract.

39. SUBJECT TO OPINION: Notwithstanding any other provision of this Second Amended Contract, it shall not become effective until there has been obtained, from Messrs. Orrick, Herrington & Sutcliffe, the bond counsel who issued the original opinion for the bonds issued pursuant to the Bond Resolution, an opinion stating that any and all requirements of the Bond Resolution, the bonds issued pursuant thereto, and the laws authorizing and governing the issuance of such bonds, with respect to execution of this Second Amended Contract have been met.

40. SUBJECT TO REMOVAL OF SAN MARCOS DECISION STRICTURES: Notwithstanding any other provision of this Second Amended Contract, it shall not become effective until each of the Contractors, upon advice of their respective attorneys, agrees in writing that the strictures imposed upon the payment by public agencies of certain capital costs, by the California Supreme Court in the case of San Marcos Water District v. San Marcos Unified School District (1986) 42 Cal. 3d 154, have been lifted either by remedial legislation or further judicial decision.

Executed on the day and year first above written at Stockton, California.

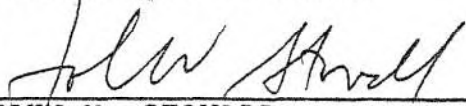
STOCKTON EAST WATER DISTRICT
a political subdivision of the
State of California

By: 
ROGER M. HUCKINS, PRESIDENT

ATTEST:

APPROVED AS TO FORM:


EDWARD M. STEFFANI
SECRETARY


JOHN W. STOVALL
GENERAL COUNSEL

Address for Notice to
Stockton East:
Post Office Box 5157
Stockton, California 95205

CALIFORNIA WATER SERVICE
COMPANY
a California Corporation

By C. H. Stump
C. H. STUMP, PRESIDENT

ATTEST:

APPROVED AS TO FORM:
McCutchen, Doyle, Brown
& Enersen

Lester E. Saxe
LESTER SAXE
SECRETARY

A. Crawford Greene
A. CRAWFORD GREENE
ATTORNEYS

Address for Notice to Cal-Water:
Post Office Box 1150
San Jose, California 95108

CITY OF STOCKTON, a municipal
corporation of the State of
California

By Barbara Fass
BARBARA FASS, MAYOR

ATTEST:

APPROVED AS TO FORM:

Frances Hong
FRANCES HONG
CITY CLERK

Robert Thomas Harris
ROBERT THOMAS HARRIS
CITY ATTORNEY

Address for Notice to City:
c/o City Clerk, City Hall
Stockton, California 95202

LINCOLN VILLAGE MAINTENANCE
DISTRICT, a political subdivi-
sion
of the State of California
governed by the Board of Super-
visors of San Joaquin County

By George Barber
GEORGE BARBER
CHAIRMAN, Board of Super-
visors
County of San Joaquin

State of California

ATTEST:

APPROVED AS TO FORM:

JORETTA J. HAYDE
CLERK OF THE Board
of Supervisors of the
County of San Joaquin,
State of California



By:

Joretta J. Hayde
DEPUTY CLERK

John Cheadle
JOHN CHEADLE
COUNTY COUNSEL

Address for Notice to Lincoln:
c/o Board of Supervisors
Courthouse
222 E. Weber Avenue
Stockton, California 95202

COLONIAL HEIGHTS MAINTENANCE
DISTRICT, a political subdivi-
sion of the State of
California
governed by the Board of Super-
visors of San Joaquin County

By:

George L. Barber
GEORGE BARBER, CHAIRMAN
Board of Supervisors
County of San Joaquin
State of California

ATTEST:

APPROVED AS TO FORM:


JORETTA J. HAYDE
CLERK OF THE Board
of Supervisors of the
County of San Joaquin,
State of California



By:

Joretta J. Hayde

~~DEPUTY~~ CLERK


JOHN CHEADLE
COUNTY COUNSEL

Address for Notice to Colonial:
c/o Board of Supervisors
Courthouse
222 E. Weber Avenue
Stockton, California 95202

Exhibit "A"

AMORTIZATION SCHEDULE

| Year | P a y m e n t s | | Total | Bond Years | Cumulative Bond Years |
|------|--------------------|-----------------------|-------------|------------|--------------------------|
| | Interest (sale) | Principal (1,000s) | | | |
| 1975 | - | - | - | - | - |
| 1976 | \$1,386,000 | - | \$1,386,000 | - | - |
| 1977 | 1,386,000 | - | 1,386,000 | - | - |
| 1978 | 1,386,000 | - | 1,386,000 | - | - |
| 1979 | 1,386,000 | \$ 250 | 1,636,000 | 1,000 | 1,000 |
| 1980 | 1,368,500 | 275 | 1,643,500 | 1,375 | 2,375 |
| 1981 | 1,349,250 | 300 | 1,649,250 | 1,800 | 4,175 |
| 1982 | 1,328,250 | 325 | 1,653,250 | 2,275 | 6,450 |
| 1983 | 1,303,500 | 350 | 1,655,500 | 2,800 | 9,250 |
| 1984 | 1,281,000 | 375 | 1,656,000 | 3,375 | 12,625 |
| 1985 | 1,254,750 | 400 | 1,654,750 | 4,000 | 16,625 |
| 1986 | 1,226,750 | 425 | 1,651,750 | 4,675 | 21,300 |
| 1987 | 1,197,000 | 450 | 1,647,000 | 5,400 | 26,700 |
| 1988 | 1,165,500 | 475 | 1,640,500 | 6,175 | 32,875 |
| 1989 | 1,132,250 | 500 | 1,632,250 | 7,000 | 39,875 |
| 1990 | 1,097,250 | 550 | 1,647,250 | 8,250 | 48,125 |
| 1991 | 1,058,750 | 600 | 1,653,750 | 9,600 | 57,725 |
| 1992 | 1,016,750 | 650 | 1,666,750 | 11,050 | 68,775 |
| 1993 | 971,250 | 700 | 1,671,250 | 12,600 | 81,375 |
| 1994 | 992,250 | 750 | 1,672,250 | 14,250 | 95,625 |
| 1995 | 869,750 | 800 | 1,669,750 | 16,000 | 111,625 |
| 1996 | 813,750 | 850 | 1,663,750 | 17,850 | 129,475 |
| 1997 | 754,250 | 900 | 1,654,250 | 19,800 | 149,275 |
| 1998 | 691,250 | 950 | 1,641,250 | 21,850 | 171,125 |
| 1999 | 624,750 | 1,025 | 1,649,750 | 24,600 | 195,725 |
| 2000 | 553,000 | 1,100 | 1,653,000 | 27,500 | 223,225 |
| 2001 | 476,000 | 1,175 | 1,651,000 | 30,550 | 253,775 |
| 2002 | 393,750 | 1,250 | 1,643,750 | 33,750 | 287,525 |
| 2003 | 306,250 | 1,350 | 1,656,250 | 37,800 | 325,325 |
| 2004 | 211,750 | 1,450 | 1,661,750 | 42,050 | 367,375 |
| 2005 | 110,250 | 1,575 | 1,685,250 | 47,250 | 414,625 |

/ 15,125,000/
term maturity

\$19,800,000 27 yr. average: 414,625
\$1,654,287
Average life: 20.94 years.

Exhibit "A"

\$15,125,000 dated 2005; minimum mandatory calls starting in 1991 as per schedule.

Dated 4/1/75.

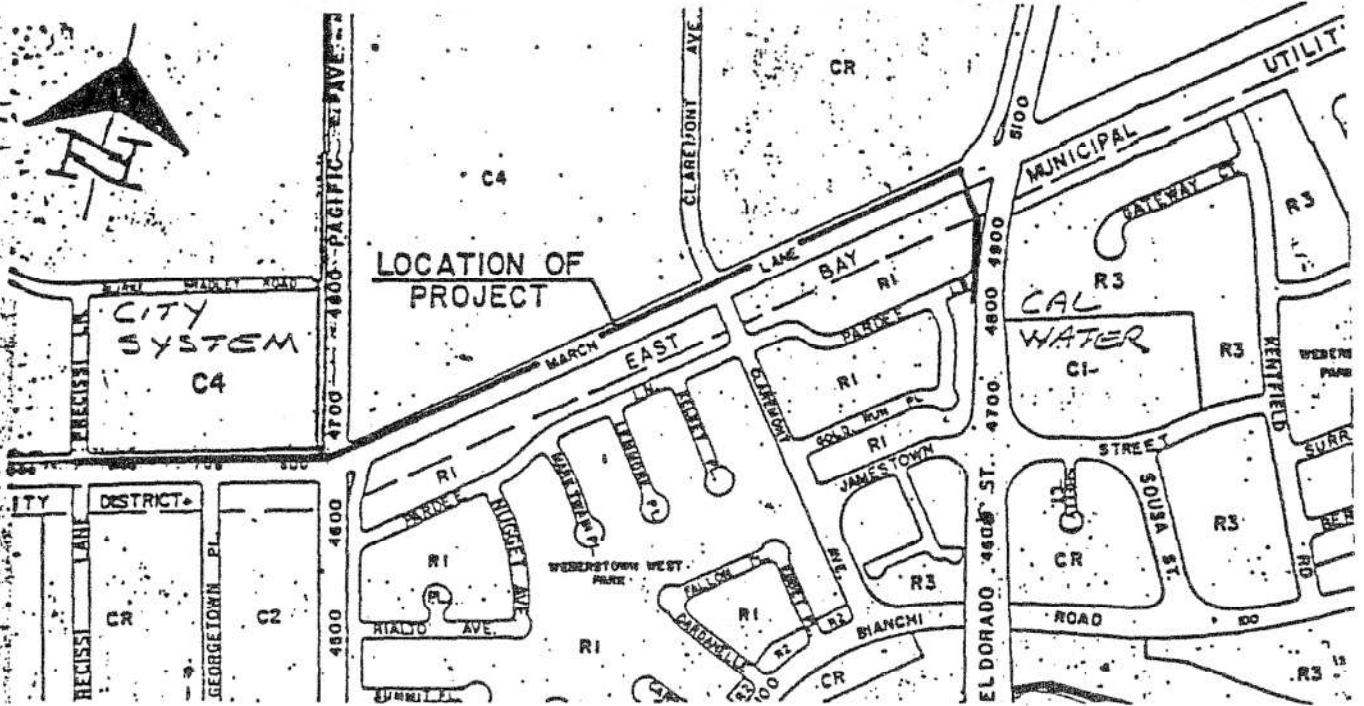
Call premiums:

| <u>Premium</u> | <u>Redemption Year</u> |
|----------------|------------------------|
| 2-1/2% | 1991 |
| 2-1/4 | 1992 |
| 2 | 1993 |
| 1-3/4 | 1994 |
| 1-1/2 | 1995 |
| 1-1/4 | 1996 |
| 1 | 1997 |
| 3/4 | 1998-1999 |
| 1/2 | 2000-2001 |
| 1/4 | 2002-2004 |
| 0 | 2005 |

Paying Agent:

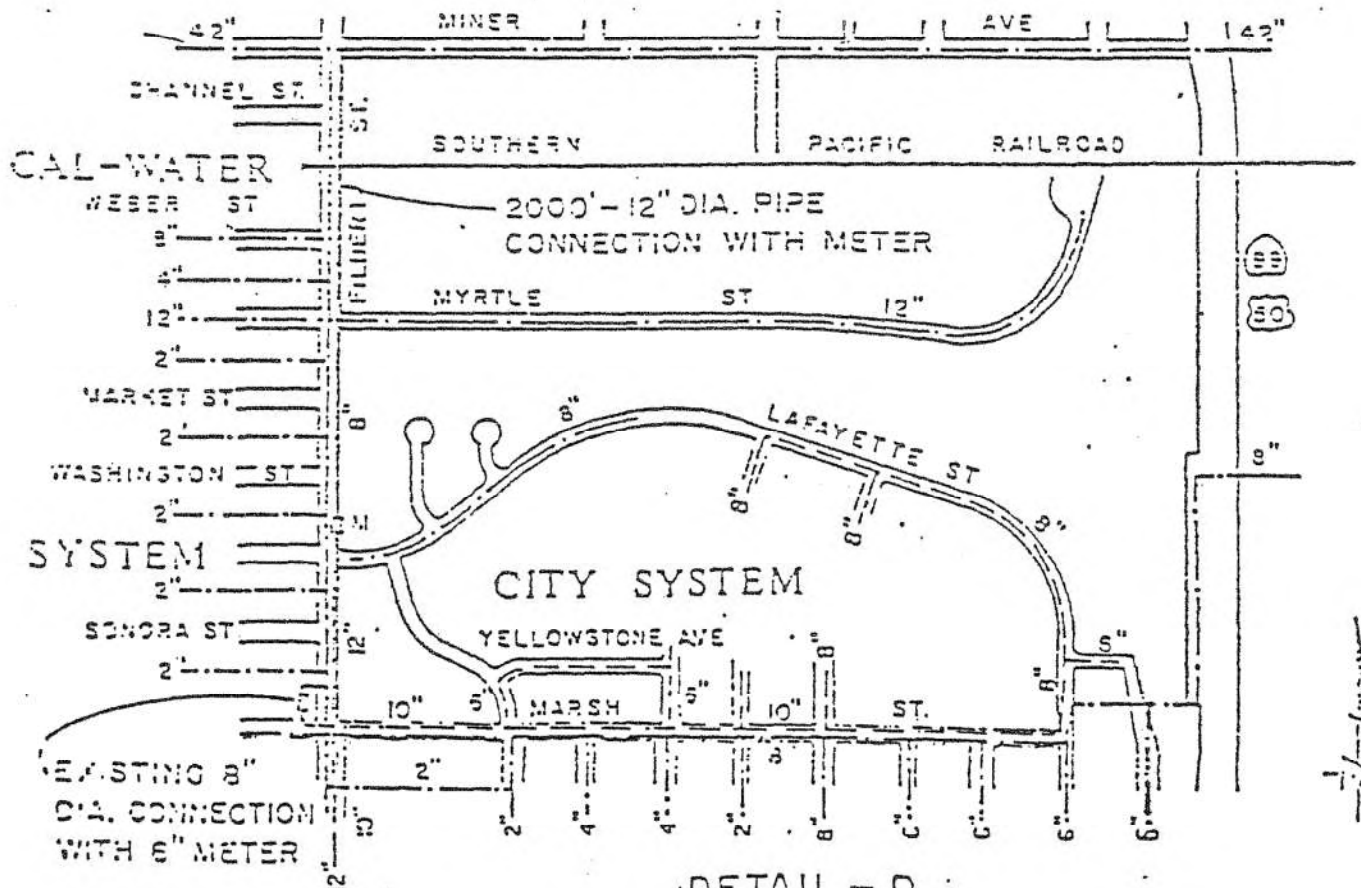
Bank of America,
National Trust and
Savings Association

The foregoing schedule is an example only based on
interest at 7%.



DETAIL - C

CAL-WATER CONNECTION TO CITY (NORTH)



DETAIL - D

CAL-WATER CONNECTION TO CITY (DIAMOND D-WALNUT)

E.L.L.L.L. "D"

EXHIBIT C

WATER TREATMENT FACILITIES ADVANCES

| | | |
|-------|--|---------------------|
| 1. | Feasibility Study of Master Water Plan Recommendations | \$ 24,510.01 |
| 2. | Financial Consultant's Services | 24,612.72 |
| 3. | Design Engineering, Pipeline | 46,212.05 |
| 4. | Surveys, Pipeline and Treatment Plant | 31,718.43 |
| 5. | Soil Studies, Pipeline and Treatment Plant | 17,358.29 |
| 6. | Design Engineering, Treatment Plant | 105,660.32 |
| 7. | Architectural Design Services | 14,707.38 |
| 8. | Contingency Water Plan | 13,974.00 |
| 9. | P.L. 984 Loan Application | 40,893.60 |
| 10. | Environmental Impact Report | 11,521.13 |
| 11. | Legal Services | 35,960.00 |
| 12. | Bond Election | 25,817.21 |
| 13. | Lands, Easements and Rights of Way | 209,094.22 |
| TOTAL | | <u>\$602,039.36</u> |

The foregoing items were expended prior to November 30, 1974. There shall be added to said sum of \$602,039.36 an additional sum in the amount of \$12,034.10 for items similar to those enumerated above expended between December 1, 1974 and the date that funds became available from the sale of the Water Treatment Facilities Bonds.

EXHIBIT D

MAJOR REPAIR AND REPLACEMENT SCHEDULE

The following schedule of major repairs and replacements is the schedule mentioned in subparagraph 7B of the Contract.

Estimated Costs of Major Repairs
and Replacements During Five-Year
Periods Shown (Based on 1974
Costs in \$1000)

Item

| | <u>0-5</u> | <u>5-10</u> | <u>10-15</u> | <u>15-20</u> | <u>20-25</u> | <u>25-30</u> | <u>30-35</u> |
|-----------------------------------|------------|-------------|--------------|--------------|--------------|--------------|--------------|
| Chemical Feeders | 5 | 15 | 25 | 25 | 25 | 25 | 25 |
| Electrical and Instrumentation | 10 | 40 | 60 | 60 | 60 | 60 | 60 |
| Natural Gas Engines | 5 | 20 | 5 | 20 | 5 | 20 | 5 |
| Chemical Mixers | 3 | 6 | 6 | 6 | 6 | 6 | 6 |
| Pumps and Motors | 30 | 40 | 50 | 50 | 50 | 50 | 50 |
| Chlorine Equipment | 5 | 10 | 10 | 10 | 10 | 10 | 10 |
| Air Conditioning | - | - | 8 | - | - | 8 | - |
| Flocculators | 5 | 10 | 14 | 14 | 14 | 14 | 14 |
| Valves | 4 | 8 | 8 | 8 | 8 | 8 | 8 |
| Miscellaneous | 5 | 11 | 11 | 11 | 11 | 12 | 12 |
| Sub-total | 72 | 160 | 197 | 204 | 189 | 213 | 190 |

Total = \$1,225,000.00

Cost Per Year = \$ 35,000.00

Ed Ste Marie
Stockton - East Water Dist
P.O. Box 5157
Stockton CA 95205

Before the Board of Supervisors

County of San Joaquin, State of California

B- 87-1419

RECEIVED
SEP 24 1987

MOTION: SOUSA/CARTER

STOCKTON-EAST
WATER DISTRICT

SECOND AMENDED CONTRACT FOR SALE OF TREATED WATER

IT IS HEREBY RESOLVED that the Board of Supervisors approve the Second Amended Contract between Stockton East Water District, California Water Service Company, City of Stockton, and Lincoln Village and Colonial Heights Maintenance Districts and authorize the Chairman of the Board to execute the Contract.

I HEREBY CERTIFY that the above order was passed and adopted on _____
by the following vote of the Board of Supervisors, to wit:

SEP 15 1987

AYES: WILHOIT, COSTA, SOUSA, CARTER, BARBER

NOES: NONE

ABSENT: NONE

ABSTAIN:

Copies to:

JORETTA J. HAYDE
Clerk of the Board of Supervisors
County of San Joaquin
State of California



JORETTA J. HAYDE

RESOLUTION NO. 87-88-10

RESOLUTION OF THE BOARD OF DIRECTORS OF THE
STOCKTON-EAST WATER DISTRICT APPROVING AND
AUTHORIZING EXECUTION OF SECOND AMENDED CONTRACT
WITH CITY OF STOCKTON, LINCOLN VILLAGE
MAINTENANCE DISTRICT, COLONIAL HEIGHTS
MAINTENANCE DISTRICT, AND CALIFORNIA WATER
SERVICE COMPANY.

IT IS HEREBY RESOLVED that the Second Amended Contract
between the Stockton-East Water District, the California
Water Service Company, the City of Stockton, the Lincoln
Village Maintenance District, and the Colonial Heights Maintenance District providing for the sale of treated water, for a term extending until April 1, 2035, be, and it hereby is, approved.


BE IT FURTHER RESOLVED that the President and Secretary of this Board of Directors be, and they hereby are, authorized and directed to execute said Second Amended Contract on behalf of the STOCKTON-EAST WATER DISTRICT.

PASSED AND ADOPTED this 15th day of September, 1987, by the following vote of the Board of Directors, to wit:

AYES: BOZZANO, DONDERO, HUCKINS, LAVEN, and SOLARI

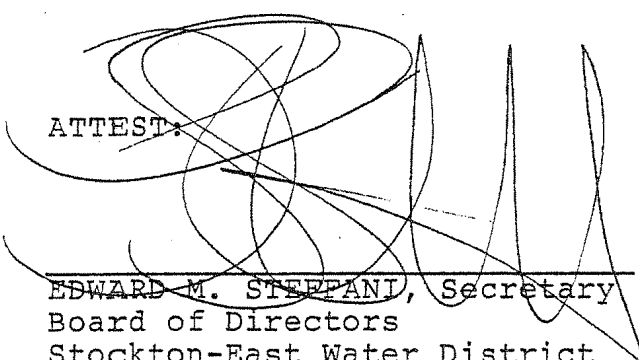
NOES: TONE

ABSENT: MACNEAR



ROGER M. HUCKINS, President
Board of Directors
Stockton-East Water District

ATTEST:


EDWARD M. STEFFANI, Secretary
Board of Directors
Stockton-East Water District

I hereby certify that I am the Secretary of the Stockton-East Water District and that the foregoing is a true and correct copy of a resolution which was duly adopted by the vote of the Board of Directors of the Stockton-East Water District shown above on September 15th, 1987.

Dated at Stockton, California, on the 25th day of September, 1987.

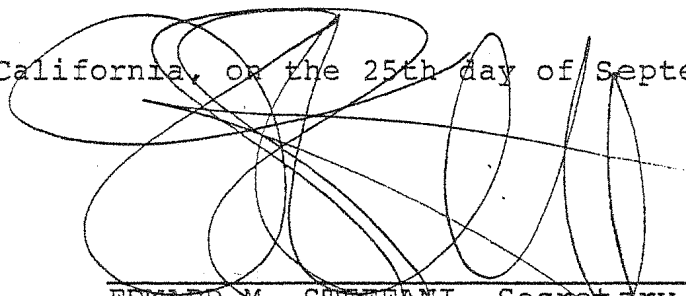

EDWARD M. STEFFANI, Secretary
Stockton-East Water District

Exhibit "E"
Sheet 1 of 2

STOCKTON CITY COUNCIL

RESOLUTION AUTHORIZING THE EXECUTION OF A SECOND AMENDED CONTRACT FOR THE SALE OF TREATED WATER BETWEEN THE CITY OF STOCKTON, STOCKTON EAST WATER DISTRICT, CALIFORNIA WATER SERVICE COMPANY, LINCOLN VILLAGE MAINTENANCE DISTRICT AND COLONIAL HEIGHTS MAINTENANCE DISTRICT

WHEREAS, in order to meet the water needs of the parties hereto, the original contract was made February 11, 1975, and amended May 31, 1977, allocating certain water entitlements among the parties; and

WHEREAS, such agreements were executed in order to protect the groundwater basin in and around the City of Stockton from overdraft and saline intrusion; and

WHEREAS, in order to further those considerations enunciated in the original contracts, it has become necessary to reapportion certain surface water entitlements, and to make provisions for the expansion of certain water conveyance, storage and treatment facilities; now therefore

BE IT RESOLVED BY THE COUNCIL OF THE CITY OF STOCKTON, AS FOLLOWS:

That the Mayor is hereby authorized to execute on behalf of the City of Stockton the Second Amended Four Party Contract attached part hereof.

Before the Board of Supervisors
County of San Joaquin, State of California

B- 87-1419

MOTION: SOUSA/CARTER

SECOND AMENDED CONTRACT FOR SALE OF TREATED WATER

IT IS HEREBY RESOLVED that the Board of Supervisors approve the Second Amended Contract between Stockton East Water District, California Water Service Company, City of Stockton, and Lincoln Village and Colonial Heights Maintenance Districts and authorize the Chairman of the Board to execute the Contract.

I HEREBY CERTIFY that the above order was passed and adopted on September 15, 1987 by the following vote of the Board of Supervisors, to wit:

AYES: WILHOIT, COSTA, SOUSA, CARTER, BARBER

NOES: NONE

ABSENT: NONE

ABSTAIN: NONE

JORETTA J. HAYDE
Clerk of the Board of Supervisors
County of San Joaquin
State of California



Joretta J. Hayde

Before the Board of Supervisors
County of San Joaquin, State of California

B- 87-1419

MOTION: SOUSA/CARTER

SECOND AMENDED CONTRACT FOR SALE OF TREATED WATER

IT IS HEREBY RESOLVED that the Board of Supervisors approve the Second Amended Contract between Stockton East Water District, California Water Service Company, City of Stockton, and Lincoln Village and Colonial Heights Maintenance Districts and authorize the Chairman of the Board to execute the Contract.

I HEREBY CERTIFY that the above order was passed and adopted on September 15, 1987 by the following vote of the Board of Supervisors, to wit:

AYES: WILHOIT, COSTA, SOUSA, CARTER, BARBER

NOES: NONE

ABSENT: NONE

ABSTAIN: NONE

JORETTA J. HAYDE
Clerk of the Board of Supervisors
County of San Joaquin
State of California



Joretta J. Hayde

**Agreement Regarding Stockton East Water District
Base Monthly Payments and Reconciliation between the Urban Contractors**

This agreement is made this 24 day of October, 2019 between the City of Stockton ("City"), the California Water Service Company ("Cal Water"), Lincoln Village Maintenance District ("Lincoln Village") and Colonial Heights Maintenance District ("Colonial Heights"), collectively known as (the "Urban Contractors" or "UCs").

WHEREAS, to reduce overall reliance on groundwater pumping for municipal and industrial use within the UC service areas, Stockton East Water District ("SEWD") delivers base and additional drinking water supplies to the UCs, pursuant to the Second Amended Contract ("the Contract") dated September 15, 1987, which defines how the water supplies are allocated to the UCs; and

WHEREAS, Sections 4 and 5 of the Contract stipulate the UCs will provide water usage information to SEWD by September 1 of each year; and SEWD will then calculate the total amount of water produced and assign the UCs their annual water allocation and financial responsibility for the Base Monthly Payment ("BMP") for the succeeding year as a percentage of allocated costs for total water produced as specified in the SEWD Annual Budget; and

WHEREAS, the Urban Contractors recognize the amount of water actually used by each of them may vary in a given year from the percentage of water and costs allocated by SEWD, and for this reason and as provided under Section 4B of the Contract, desire to establish a process among them to reconcile financial contributions to the BMP.

Now, therefore,

IN CONSIDERATION of the foregoing and the mutual promises contained herein, the Urban Contractors agree as follows:

1. Recitals

Each of the UCs represents and warrants to the others that the above recitals are true and correct.

2. SEWD Invoice Payments

SEWD invoices the UCs monthly, based on the allocated percentages of the BMP, pursuant to the terms of the Contract. Each UC shall pay such invoices received from SEWD, separately, in full, and in a timely manner to SEWD as required by the Contract.

3. Annual Accounting and Reconciliation

a. On a semi-annual basis (October or March unless agreed to otherwise) or as needed, the City and Cal Water desire to participate in a true up to reconcile payments made by each to the BMP. This reconciliation shall be based on the difference between (i) the BMP percentages allocated to the City and Cal Water, respectively, by SEWD, and (ii) the actual water supply delivered by SEWD to the City and Cal Water, respectively. For the avoidance of doubt, in determining the amount of the true up payments required by this paragraph, (i) Cal Water shall only be responsible for the cost of any water that Cal Water may take from the City's allocation; (ii) the City shall only be responsible for the cost of any water that the City may take from Cal Water's allocation; and (iii) neither Cal Water nor the City shall be responsible for the cost of any water that Lincoln Village, Colonial Heights, or any other person or entity other may take.

b. The cost of any "additional water" (as that term is defined in Section 4D of the Contract) delivered to and used by any individual Urban Contractor during any given year shall not be included in the reconciliation process required by Paragraph 3(a), above. Instead, each Urban Contractor shall pay the full cost of any such additional water to SEWD, directly.

c. Urban Contractor staff will cooperate to maintain sufficient water delivery and monthly use information, spreadsheets, calculations and reports as necessary to facilitate and adequately justify the semi-annual reconciliation.

d. Any reconciliation payments required pursuant to Paragraph 3(a), above, shall be completed within sixty (60) days of such reconciliation.

4. Former Allocation Agreements between the Urban Contractors

This Agreement shall replace in its entirety the Stockton East Water District Treated Water Supply and Cost Allocation Agreement between the UCs dated May 1, 2012, and all amendments, supplements, and addenda thereto.

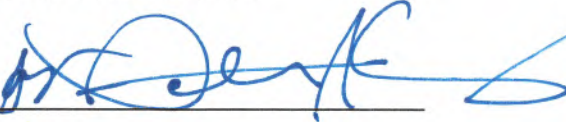
5. Term

This Agreement shall terminate on expiration of the Contract, unless otherwise modified by agreement of the Urban Contractors.

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IN WITNESS WHEREOF, the Parties have executed this agreement as of the day and year first written above.

CITY OF STOCKTON

By: 

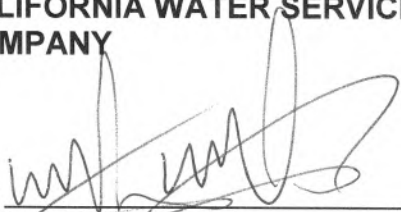
Laurie Montes
Interim City Manager

ATTEST:

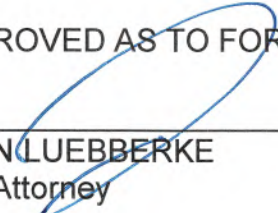

ELIZA GARZA
City Clerk




**CALIFORNIA WATER SERVICE
COMPANY**

By: 
MICHAEL MARES
Vice President of Operations

APPROVED AS TO FORM:


JOHN LUEBBERKE
City Attorney

APPROVED AS TO FORM:


LYNNE MCGHEE
Vice President, General Counsel

**COLONIAL HEIGHTS
MAINTENANCE DISTRICT**

By: _____
KRIS BALAJI, PMP, P.E.
Director of Public Works

**LINCOLN VILLAGE MAINTENANCE
DISTRICT**

By: _____
KRIS BALAJI, PMP, P.E.
Director of Public Works

APPROVED AS TO FORM:

LAWRENCE P. MEYERS
Deputy County Counsel

IN WITNESS WHEREOF, the Parties have executed this agreement as of the day and year first written above.

CITY OF STOCKTON

By: _____

Laurie Montes
Interim City Manager

ATTEST:

**CALIFORNIA WATER SERVICE
COMPANY**

ELIZA GARZA
City Clerk

By: _____
MICHAEL MARES
Vice President of Operations

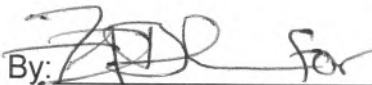
APPROVED AS TO FORM:

JOHN LUEBBERKE
City Attorney


APPROVED AS TO FORM:

LYNNE MCGHEE
Vice President, General Counsel

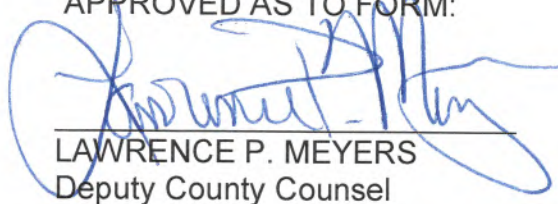
**COLONIAL HEIGHTS
MAINTENANCE DISTRICT**

By:  _____
KRIS BALAJI, PMP, P.E.
Director of Public Works

**LINCOLN VILLAGE MAINTENANCE
DISTRICT**

By:  _____
KRIS BALAJI, PMP, P.E.
Director of Public Works

APPROVED AS TO FORM:



LAWRENCE P. MEYERS
Deputy County Counsel

AGREEMENT FOR PURCHASE OF WATER FROM THE
WOODBIDGE IRRIGATION DISTRICT BY THE CITY OF STOCKTON



This Agreement is made and entered into between Woodbridge Irrigation District and the City of Stockton, adjoining public entities located within the County of San Joaquin, State of California, this 22 day of January, 2008.

Background Recitals

a. The City of Stockton obtains a portion of its municipal water supply from wells located within the City, extracting the water from the underground aquifer, which is replenished in part by flows of the Mokelumne River. Stockton desires to acquire a supplemental surface water supply to offset current groundwater pumping as part of its overall conjunctive use program.

b. Because of substantial population growth and increasing water demands in the Stockton metropolitan area, the City is also developing its Delta Water Supply Project to divert surface water from the San Joaquin River, and has obtained Permit 21176 from the State to divert water for that Project. The City needs to supplement that surface water supply in the periods of each year when the diversion of water from that source is restricted by the terms of the City's Water Permit.

c. Woodbridge Irrigation District (District or WID) is an irrigation district that is organized and existing under Division 11 of the California Water Code (Sections 20500 et seq). The District is located immediately west of the City of Lodi and immediately north of the City of Stockton. The District diverts water from the Mokelumne River at Woodbridge Dam, located in the NE 1/4 of the SE 1/4 of Section 34, Township 4 N, Range 6 E, MDBM, for irrigation of a net area of 19,370.3 acres within a gross area of 40,441.77 acres and that are located within Townships 2 N, 3 N, 4 N and 5 N, Ranges 5 E, 6 E and 7 E, MDBM.

d. The District diverts its water supply from the Mokelumne River under pre-1914 appropriative rights for the diversion of water up to 300 cubic feet per second (cfs). The District's pre-1914 rights are overlapped by the District License No. 5945 for the appropriation of 300 cfs per annum from February 1 to October 31 for irrigation use, supplemented by License No. 8214 for the diversion of an additional 114.4 cfs from May 1 to August 31 of each year and from November 1 of each year to January 31 of the succeeding year. The combined rights under the two Licenses together with the District's pre-1914 rights are limited to a maximum diversion of 414.4 cfs.

e. The District, following the East Bay Municipal Utility District's (EBMUD) building of the Pardee and Camanche Reservoirs on the Upper Mokelumne River, entered into Agreements with EBMUD in 1938 after Pardee's completion and again in 1965 after the completion of Camanche, which acknowledged the priority of some of the District rights to the EBMUD rights, and under which agreements EBMUD releases a Regulated Base Supply of water each year from Camanche Reservoir for diversion by the District at Woodbridge Dam for irrigation use.

f. The District's demand for water from the Mokelumne River under its water rights has begun to diminish by reason of the District's water conservation programs, including the conversion of field furrow and flood irrigation methods of application to water applied by drip irrigation and micro-sprinklers, which reduce the amount of applied water for crops. Reductions in the delivery of irrigation water have also occurred and are continuing to occur by reason of the number of irrigated acres being reduced as a result of urbanization of lands in the southern part of the District which are being annexed by the City of Stockton.

g. By reason of the anticipated reductions in water usage within the District, the District has determined that it will have surplus water in certain amounts available under its water entitlements from the Mokelumne River, and the water that would be delivered to the City by this Agreement will be surplus to the needs of the landowners and water users within the District as required by Section 22259 of the Water Code. The District's conveyance facilities traverse the northerly portion of the City of Stockton, and the District could deliver water diverted from the Mokelumne River under its water rights to Stockton at a location along the District's canal system indicated in this Agreement.

h. The City of Stockton desires to contract with the District for the purchase of water from the District for use within the City service area, for which the City will pay on the basis and pursuant to the conditions hereinafter set forth.

NOW, THEREFORE, WOODBRIDGE IRRIGATION DISTRICT (DISTRICT)
AND THE CITY OF STOCKTON (CITY) AGREE AS FOLLOWS:

1. Water to be Made Available to City and Payment. Beginning on January 1, 2009, and continuing through the term of this Agreement, the District shall make available to the City out of District's Regulated Base Supply, 6,500 acre-feet per annum under the terms and conditions herein set forth. In consideration thereof, the City will pay the District annually the sum of \$200 per acre-foot for such water or \$1,300,000 (ONE MILLION THREE HUNDRED THOUSAND DOLLARS) annually. Payments thereon of \$325,000 (THREE HUNDRED TWENTY FIVE THOUSAND DOLLARS) quarterly are due and payable in advance beginning on the first day of each calendar quarter, commencing on January 2, 2009. Said payments shall be made irrespective of whether the City takes the water made available to it under this Agreement and irrespective of whether the District has water available to it under this Agreement for delivery to the City, provided that the District shall make its best efforts to provide to the City the amounts of water provided for in this Agreement.

In lieu of delivering water in 2009, the quarterly payments made to the District in 2009 shall be used by the District for the improvements to be made by the District to the Wilkerson Canal as provided in paragraph 2 below, and any right of way costs that may be incurred, in order to deliver the water to the City. Any funds remaining after the completion of such capital improvements shall be refunded to the City.

After 2009, for each quarter-year payment made by the City prior to the completion and commencement of operation of the City's initial phase of the DWSP (not to exceed a total of

eight calendar quarters), the City shall be entitled to one-fourth of its annual water entitlement that year (1,625 acre-feet) as a carryover credit, to be delivered thereafter at not to exceed a total of 2,000 acre-feet per year, to be provided in years when District has the additional water available to make such deliveries, as provided in paragraph 6.a. hereof.

2. Point of Delivery and Times and Amounts of Delivery. The District agrees to deliver the water to the City from the District's Wilkerson Lateral canal, at the northwest corner of the City's parcel located in the East ½ of the NE ¼ of Section 33, T 3 N, R 6 E, MDB&M (APN 059-030-02, formerly owned by Rodao), as shown in Exhibit A attached hereto. The water will be delivered during the period from March 1 through July 31 of each year, at a uniform rate of delivery, 24 hours per day, throughout the month. The District shall make needed capacity improvements to the Wilkerson lateral, using therefore the proceeds of the payments by the City to the District during the initial year (2009) under the Agreement, as set forth in Section 1 above. The improvements to be made and the schedule for the improvements shall be prepared by the District and shall be approved by the City. The cost of the improvements needed to the Wilkerson Lateral in order to deliver the water to the City shall be at the cost of the City.

The City shall construct at its sole cost and expense the facilities needed to measure and take delivery of water from the District Canal system at a mutually agreed-upon location at the above-described point of delivery, and the design, construction and operation thereof shall be approved by the District. The City will be responsible for all costs of operation, repair, maintenance and replacement of such facilities. The measurement facilities shall be recalibrated annually at the City's expense as requested by the District and the District shall have a continuing right to test the accuracy of such facilities.

a. The City shall provide the District, as soon as possible after January 1 of each year, and in any event not later than February 15 of each year, an estimate of the amount of water anticipated to be needed by the City during each month of that year from March 1 through July 31, which scheduling will be subject to the District's approval. The District will supply such water on said approved monthly schedule pursuant to and as limited by the terms, conditions and limitations of this Agreement; provided that the City shall to the extent that its operations will permit, schedule the taking of as much of its entitlement to water from the District that year prior to July 1 as is feasible, but in any event not less than 3,000 acre feet. The delivery of 6,500 acre-feet of water will be made each year in approximately the following amounts each month. The parties may jointly agree to variations in the monthly delivery schedule amounts subject to the availability of water.

Estimated Deliveries

| <u>Month</u> | <u>Amount (af)</u> |
|-----------------------|--------------------|
| March | 1,000 ± |
| April | 1,000 ± |
| May | 3,000 ± |
| June | 1,500± |
| July | 1,000 ± |
| <hr/> | |
| Total (not to exceed) | 6,500 |

Orders for water deliveries and changes thereto must be made upon a 72-hour notice placed in person or by phone with the District on any business day (Monday-Friday) and between the hours of 8 AM to 12 PM and 1 PM to 5 PM. No water orders to turn water on or off or change the rate of delivery shall be left with an answering machine or faxed to the District. Delivery of water shall be at a constant rate until changed by proper notice.

b. At such times as it is possible for the District to deliver any of the 6,500 acre-feet of water to the City during the period from August 1 to October 15, and also at such times as the District has additional water available and can deliver water in excess of 6,500 acre feet during the period from March 1 through October 15, then by mutual agreement of the parties, delivery of such water to the City may be made by the District. The City shall pay the District \$100 per acre foot for any such additional water delivered to the City in excess of 6,500 acre-feet.

c. The determination of whether any such water is available for delivery to the City shall be made solely by the District. In the event that both the City of Stockton and the City of Lodi under their respective Agreements request additional water during the same period(s) that additional water is available for delivery, the water shall be apportioned between them if necessary in the manner and times that they shall agree upon. In the event they do not agree, such water shall be apportioned between them by the District 50/50, i.e., one-half to Lodi and one-half to Stockton; provided that, if such apportionment would result in either party losing any deficiency curtailment water banked to the credit of that party because of non-use within the required eight-year period under Section 6.b., that party shall have a first right to such portion of the available water that will avoid such loss.

d. The water furnished by the District under this Agreement shall be used or furnished by the City only for domestic, municipal, industrial, irrigation and other beneficial uses. The City shall have no right to sell or transfer any of its entitlement to water from the District under the Agreement, permanently or on interim basis, or to use any of said water outside of the City, without the District's prior approval.

e. The District further agrees that it will, during the term of this Agreement at the City's request, divert from the Mokelumne River at the District's Woodbridge Dam and wheel and convey through the District's canal system to the City's delivery point any non-District water acquired by or available to the City, subject to the District having available capacity for that purpose and subject to the City paying a per-acre-foot charge in an amount which the District determines to be its costs for such service. The District's cost for such service in year 2007 would be \$20 per acre-foot. There would be no wheeling charge for District water in the event the City purchases some of the District water that is under the purchase contract of the City of Lodi.

f. Commencing on January 1 of 2010, and on January 1 of each year thereafter, the amounts payable to the District under paragraph 1, and the amounts payable to the District under subparagraphs 2.b. and 2.e., shall be increased by two percent per year above the amounts payable during the preceding calendar year. In the event that the annual change in the Consumer Price Index (CPI-W, unadjusted U.S. average) published in December of each year by the United

States Bureau of Labor Statistics, commencing in December of the preceding year, has increased more than two (2) percent above the December Index of the prior year, the increases in the amounts payable in the ensuing year shall be in the percentage of that increase; provided that any such annual increase shall not exceed five percent (5%).

g. The payments by the City to the District under this Agreement shall be deemed to include the payment during the term of the Agreement of all District groundwater recharge fees on parcels within the City of Stockton which are also located within the boundary of the District.

3. Term of Agreement and Right to Purchase Additional Water.

a. This Agreement shall be effective from the date of execution hereof, and shall remain in effect for a term of forty (40) years from said date.

b. Upon receipt by the District of written notice and request for renewal from the City at least two years in advance of the termination of the Agreement, the District agrees to negotiate with the City for a renewal of this Agreement for an additional forty (40) year term, on terms and conditions that are reasonable and equitable and which are satisfactory to the District.

c. Right to Purchase Additional Water. The City shall have the further right during the initial term of this Agreement to buy up to an additional 6,500 acre-feet of water from the District based upon the annexation of additional lands within the District to the City of Stockton after the completion and commencement of operation of the initial phase of the City's Delta Water Treatment Plant, and which as a result of such annexation will be taken out of agricultural production, as follows. For each acre of land so annexed after such date which is now zoned agricultural and which has been irrigated with District water:

- and for which a tentative subdivision map is approved for such acreage for use other than agriculture,
- and which is to be served a water supply by the utility water system now serving lands within City of Stockton,

the City will be entitled to purchase an additional 3.0 acre-feet of water per such acre from the District, on the same terms and subject to the same conditions herein applicable to the 6,500 acre-feet under this Agreement.

4. City Payments to be Made from City's Water System Revenues. The City shall make payments under this Agreement solely from the Revenues of the Stockton Municipal Water System. The City hereby pledges the Revenues to the payments required hereunder. Nothing herein shall be construed as prohibiting the City from using any other funds and revenues for purposes of satisfying any provisions of this Agreement. So long as the City is in compliance with all of its obligations hereunder, such pledge shall not prevent its application of Revenues to other operating expenses of the Stockton Municipal Water System or, subject to the payment of such operating expenses, to other lawful purposes, or impair the rights of any recipient of Revenues lawfully so applied. District agrees that it will subordinate the pledge of Revenues hereunder to any bond or bonds issued for the purpose of financing capital improvements to the

City's Municipal Water System for a period not to exceed three years from the effective date of this Agreement.

"Revenues" means "all gross income and revenue received or receivable by the City from the ownership and operation of the Stockton Municipal Water System, which gross income and revenue shall be calculated in accordance with generally accepted accounting principles, including all rates, fees, and charges received by the City for water service and connection and hook-up fees and all other income and revenue howsoever derived by the City from the ownership and operation of or arising from the Stockton Municipal Water System, but excluding in all cases any proceeds or taxes and any refundable deposits made to establish credit, federal or state grants, or advances or contributions in aid of construction."

"Stockton Municipal Water System" means "the municipal water system of the City existing on the effective date of this Agreement and all additions, betterments, extensions and improvements thereto hereafter acquired or constructed."

5. No Permanent Water Right, and Dry Year Curtailments. The District has determined that the water to be made available annually for delivery to the District pursuant to this Agreement will be surplus to the needs of the District during the term of this Agreement. The parties further agree that no permanent right to the water supplied by the District shall accrue to the City except pursuant to and as limited by the terms of this Agreement.

a. The District agrees that it will deliver up to 6,500 acre-feet per annum to the City under this Agreement except in years when forecasted runoffs in the Mokelumne Watershed by DWR and EBMUD, beginning with the February 1 forecast by DWR and EBMUD indicates that the inflow to Pardee Reservoir as of July 1 may be less than a total quantity of 375,000 acre-feet (in which case the District's Regulated Base Supply of 60,000 acre feet under its Agreements with East Bay Municipal Utility District is reduced by thirty-five percent (35%)). In such years, the District may reduce the amount of water to be provided under this Agreement by up to fifty percent (50%), as follows. Beginning in March and in each ensuing month through July when the forecasts in those months continue to indicate that the July 1 inflow may be less than 375,000 acre-feet, the District may reduce the amount of water to be provided during those months under paragraph 2.a. by up to fifty percent (50%). In the event that any ensuing monthly forecast indicates that the estimated July 1 inflow will not be less than 375,000 acre-feet, City will be entitled to have the amount of its delivery under paragraph 2.a. for that month. The remainder of any undelivered amount under paragraph 2.a., by reason of the curtailments for that year shall be included as makeup deficiency water under paragraph 6.a. unless it was delivered later in that deficiency year. There shall be no reduction in the amount of the City's annual payment to the District in such years under paragraph 1.

b. The City shall have no claim for damages for breach arising from the unavailability of water from the District or for the District's inability to deliver water to the City due to failure of facilities, intervening acts, or actions of any state or federal agency exercising jurisdiction or claiming an interest and/or right to reduce or modify operations and quantities of water otherwise available to District, and any legal action, legislation, ruling or determination adverse to the

District affecting the agreement and beyond the reasonable control of the District. District shall make good faith efforts to vigorously oppose such reductions.

6. Carryover of Entitlements. Unused water may not be carried over by the City from year to year except that the right to receive water may be "banked" for later use, as follows:

a. For each calendar quarter beginning January 1, 2010 in which payments to District are made under paragraph 1 of this Agreement but in which the City is unable to take water deliveries under the Agreement because the commencement of operations of the initial phase of the City's DWSP has not begun, the City may carry over and have credit for one-fourth of its annual water entitlement, not to exceed a total of 13,000 acre-feet. The District will make this water available for later delivery during the initial 40-year term of this Agreement, not to exceed 2,000 acre-feet per year, at such times as the District has extra water available as determined solely by the District. There will be no additional charge for the delivery of such banked water.

b. If delivery of water to the City is curtailed by District's maintenance or other District activities or by reason of a dry year condition as provided in paragraph 5.a. and is not used later in that year, then the City may carry over and have credit for the amount of such curtailment for later delivery at such time(s) as the District has extra water available as determined solely by the District. Any City credits for curtailed segments of carryover water shall expire at the end of eight (8) years from the end of the period in which the curtailment for the segment of curtailed water occurred. Such credits for the delivery of curtailed carryover water which accrue less than eight years immediately preceding the termination date of this Agreement, may extend beyond the termination of this Agreement and be utilized within eight years from the year of their accrual at such time(s) as the District has extra water available as determined solely by the District. There will be no additional charge for the delivery of such banked water.

c. The determination of whether any such banked water or curtailment water is available for delivery shall be made solely by the District, and shall be taken by the City in the years that the District determines that it is available, at the times and in the amounts determined by the District after consulting with the City on the times and amounts that is most convenient to the City.

d. In the event that both the City of Stockton and the City of Lodi request water banked to their respective credits during the same period(s) that the water is available for delivery, the water shall be apportioned between them if necessary in the manner and times that they shall agree upon. In the event they do not agree, the available water shall be apportioned between them 50/50 by the District, or one-half to each; provided that, if such apportionment would result in either party losing any deficiency curtailment water banked to the credit of that party because of non-use within the required eight-year period under Section 6.b above, that party shall have a first right to such portion of the available water that will avoid such loss.

e. Except as provided in subparagraph a, no credits shall accrue for water that is available to but is unused by the City.

7. Water Quality, Temporary Interruptions, and Responsibility for the Water Beyond Point of Delivery.

a. The water being supplied to the City is raw water diverted from the Mokelumne River, and the character or quality of the water furnished hereunder may vary from time to time. District does not guarantee in any respect the character or quality of the water furnished pursuant to this Agreement, provided that the District shall not apply or use any chemicals within the Canal section used to deliver water to the City that the City determines to be deleterious to the quality of the water for the uses made by the City of such water.

b. It is agreed that there may be, in addition to shortages of water, temporary discontinuance or reduction of water to be furnished for the City as herein provided, for purposes of investigation, inspection, maintenance, repair or replacement as may be necessary of any of the facilities used by the District for furnishing water to the City. The District agrees to provide the City notice of such temporary discontinuance or reduction of water as soon as such information is available to the District.

c. The City shall hold the District harmless from and defend the District from all claims or expenses on account of damage or claim of damage of any nature whatsoever from which there is legal responsibility, including property damage, personal injury or death, arising out of or connected with the delivery, control, carriage, handing, use, or disposal or distribution of water furnished hereunder beyond the point of delivery of water into the City's system from the District's Canal System.

8. Arrearage in Payments. No water shall be furnished to the City during any period in which the City may be in arrears in payment of charges accruing hereunder after the determination on the amount thereof as above provided. Interest on arrearage in payment shall be charges at a rate of 1-1/2% per month and compounded monthly, commencing 45 days after the due date of the payment.

9. Assignment. The provisions of this contract shall apply to and bind the successors and assigns of the respective parties hereto; but no assignment or transfer of this contract or any part thereof or interest therein by the City shall be valid unless and until approved in writing by the District; and no assignment of the obligation to provide or deliver the water shall be assignable by the District without the consent of the City.

10. CEQA and Validation of Agreement.

a. The parties agree that the District will be Lead Agency for purposes of compliance with any requirements of the California Environmental Quality Act pertaining to the execution of this Agreement by each party. District and City acknowledge and agree that the obligations of the parties under this Agreement are conditioned on District and City completing, proceedings under CEQA in connection with the Agreement and the expiration of the applicable period for any challenge to the adequacy of District's and City's compliance with CEQA without any challenge being filed. District and City shall select a qualified environmental consultant acceptable to both to prepare the underlying documentation for District's review and

consideration as may be required by CEQA and applicable law. City shall direct the qualified environmental consultant and both City and the environmental consultant shall coordinate the preparation of the environmental analysis with District to ensure an adequate and complete consideration of potential environmental impacts. Any documentation submitted by City shall be sufficient for District to make a fair decision in accordance with applicable law. Neither party shall be bound hereby unless and until District's compliance with CEQA is completed and there is no possibility of a challenge pursuant to CEQA. The obligations of each party shall be conditioned upon the result of CEQA compliance not imposing any obligations or conditions upon that party's performance that are unacceptable to that party. District and City acknowledge that any modifications to the proposed project resulting from District's compliance with CEQA may necessitate amendments to this Agreement in a mutually acceptable manner.

b. A validation action may be brought to determine the validity of this agreement pursuant to Section 22670 of the Water Code and Sections 860 et seq of the Code of Civil Procedure, within the 60-day time limit of Section 860. In the event any such action is brought, then the agreement and the parties' obligations hereunder shall be conditioned upon the entry of a judgment affirming the validity of the agreement. In the event the validation judgment contains conditions or restrictions which impose upon either party costs, requirements, obligations or limitations in their performance of the agreement or upon their operations or property interests which were not reasonably anticipated by that party as a consequence of this Agreement and which are in that party's judgment unacceptable or otherwise not in the best interests of that party, that party shall have the right to terminate this Agreement, and in that event neither party shall have any further liability or obligation to the other party hereunder.

11. Fees and Costs. Any fees, costs or expenses, including attorney fees, administrative costs, and consultant fees, incurred by the District to effect the sale of water to the City, together with CEQA and any other regulatory approval, shall be paid by District and City on a 50/50 basis. The City shall not be required to contribute to any fees or costs incurred by District relating to other issues or disputes that may arise in any of said proceedings not directly relating to City's use of District water. District shall provide to City invoices and accountings of said fees and expenses on a quarterly basis.

12. City Use of District Rights of Way. The District agrees to cooperate with City and to agree to the City's use of any District right of way along the District's Canal System needed by the City for the conveyance or distribution of water it obtains from the District. Nothing herein warrants or guarantees that the District has the ability or authority to allow such use under its interest in its rights of way.

13. Entire Agreement. This Agreement contains the full and entire Agreement of the parties and there are no other conditions, either explicit or implied, nor any warranties or promises other than those contained within the written terms of this Agreement.

14. Time of the Essence. Time is of the essence in the performance of this Agreement.

15. Nonwaiver. The failure of either party to enforce or abide by a term or condition of this Agreement shall not constitute a waiver of that term or condition unless a written Agreement

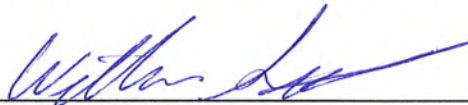
is prepared specifically providing for the waiver or forgiveness of that term and such Agreement is executed by each party hereto.

16. Date of Execution. The date of execution of this Agreement is the date of execution by the party last signing the Agreement. City shall execute this Agreement within sixty (60) days after its approval for execution by the District, and upon City's failure to do so, District shall not be obligated to enter into this Agreement.


17. Lodi's Prior Rights. City acknowledges that District has an existing Agreement with the City of Lodi dated May 13, 2003, to sell 6,000 acre-feet of water per annum to Lodi, and the City acknowledges the receipt of said Agreement, as amended on JANUARY 16, 2006. City further acknowledges that by reason thereof, this Agreement to sell such water to the City of Stockton and the providing of water to Stockton hereunder is subordinate to the District's obligations to deliver such amount of water to Lodi under the Lodi Agreement as set forth in Section 4(c) of the Lodi Agreement, as amended. The District has offered the additional 6,500 acre-feet of water to be sold to Stockton, and Lodi has declined to exercise its right of first refusal to purchase the additional water.

IN WITNESS WHEREOF, the parties hereto have executed this instrument on the 22 day of JANUARY, 2008.

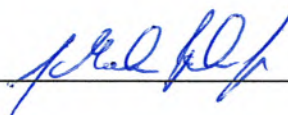
WOODBIDGE IRRIGATION DISTRICT

By 
William Stokes, President


Attest:


Andrus Christensen, Secretary

CITY OF STOCKTON, A MUNICIPAL CORPORATION

By 

Attest:


Katherine Gong Meissner, City Clerk

APPROVED AS TO FORM:

, City Attorney



Resolution No. **08-0027**

STOCKTON CITY COUNCIL

RESOLUTION AUTHORIZING THE CITY MANAGER TO EXECUTE A WATER PURCHASE AGREEMENT WITH THE WOODBRIDGE IRRIGATION DISTRICT

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF STOCKTON, AS FOLLOWS:

1. The Agreement for Purchase of Water from the Woodbridge Irrigation District (the "District") by the City of Stockton (the "Agreement") is hereby approved.
2. Pursuant to Section 10 of the Agreement, the obligations of the City under the Agreement are conditioned on the District and City completing all proceedings under the California Environmental Quality Act applicable thereto.
3. The City Manager is hereby authorized and directed to execute the Agreement, a copy of which is attached hereto as Exhibit A and incorporated herein by this reference.
4. The City Manager is hereby authorized and directed to take whatever actions are appropriate to carry out the purpose and intent of this resolution.

PASSED, APPROVED AND ADOPTED JAN 22 2008


EDWARD J. CHAVEZ, Mayor
of the City of Stockton

ATTEST:


KATHERINE GONG MEISNER
City Clerk of the City of Stockton

CITY ATTY
REVIEW

DATE JAN 15 2008



FIRST AMENDMENT TO THE AGREEMENT FOR PURCHASE OF
WATER FROM THE WOODBRIDGE IRRIGATION DISTRICT BY THE CITY
OF STOCKTON

Recitals

A. On January 22, 2008, Woodbridge Irrigation District (District) and the City of Stockton (City) entered into an "Agreement for Purchase of Water from the Woodbridge Irrigation District by the City of Stockton" (the "Agreement"). The Agreement provides for the purchase by the City of up to 6,500 acre-feet of water per year during the months of March through July of each year, plus up to an additional 6,500 acre feet annually conditioned upon the City's future annexation of agricultural lands within the District boundaries, which are as a result taken out of agricultural production.

B. The Agreement, at Section 10, provides that the obligations of the parties under the Agreement were conditioned on (i) the completion of proceedings under the California Environmental Quality Act (CEQA) to determine whether the sale and delivery of water to the City (the "project") would have a significant effect on the environment and (ii) the expiration of the applicable period for any challenge to the adequacy of such CEQA determination without a legal challenge.

C. The CEQA proceedings were conducted and completed upon a determination that the project would not present a significant effect on the environment because revisions in the project were made as set forth in the Mitigation Monitoring and Reporting Program in the Initial Study/Mitigated Declaration for the project.

D. The CEQA proceedings were further completed without any legal challenge to such determination having been filed. Further, CEQA compliance and the resulting determination did not result in the imposition of any obligations or conditions upon either party's performance that was unacceptable to that party.

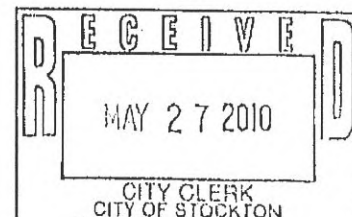
E. However, the CEQA compliance proceedings and the expiration of the period for challenge were completed later than anticipated by the parties.

F. Accordingly, the parties desire to postpone the starting dates for payments and other obligations under the Agreement for one year, as set out below.

NOW, THEREFORE, THE DISTRICT AND THE CITY HEREBY AGREE TO AMEND THE AGREEMENT, AS FOLLOWS.

1. In Section 1 of the Agreement, all reference to the year 2009 shall be amended to instead reference the year 2010.

2. In Section 2 of the Agreement, relating to improvements to be made by the District to the Wilkerson lateral through which water would be delivered to Stockton, the third sentence is amended as follows:



C-08-011 8

The District shall make needed capacity improvements to the Wilkerson lateral, using therefore the proceeds of the payments by the City to the District during the initial year ~~(2009)~~ (2010) under the Agreement, as set forth in Section 1 above. The plans associated with the improvements to be made and the schedule for the improvements shall be prepared by the District and shall be approved by the City, and the improvements shall be completed by the District within five years after the date of this Amendment.

3. The first sentence of Section 6.a. (Carryover of Entitlements), is amended to read as follows:

a. For each calendar quarter beginning January 1, ~~2010~~ 2011 in which payments to District are made under paragraph 1 of this Agreement but in which the City is unable to take water deliveries under the Agreement because the commencement of operations of the initial phase of the City's DWSP has not begun, the City may carry over and have credit for one-fourth of its annual water entitlement, not to exceed a total of 13,000 acre-feet. The District will make this water available for later delivery during the initial 40-year term of this Agreement, not to exceed 2,000 acre-feet per year, at such times as the District has extra water available as determined solely by the District. There will be no additional charge for the delivery of such banked water.

4. Except has herein amended, the Agreement remains in full force and effect.

IN WITNESS WHEREOF, the parties hereto have executed this instrument on the 13th day of May, 2010.

WOODBRIIDGE IRRIGATION DISTRICT

By

William Stokes
William Stokes, President

Attest:

Anders Christensen
Anders Christensen, Secretary

CITY OF STOCKTON, a municipal corporation

By

Kevin O'Rourke
Kevin O'Rourke, Interim City Manager

Attest:

Bill Hunter
Sr. Deputy City Clerk



APPROVED AS TO FORM AND CONTENT

By

Interim City Attorney

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10-0051

Resolution No. _____

STOCKTON CITY COUNCIL

RESOLUTION AUTHORIZING THE CITY MANAGER TO EXECUTE A FIRST AMENDMENT TO AGREEMENT FOR PURCHASE OF WATER FROM THE WOODBRIDGE IRRIGATION DISTRICT BY THE CITY OF STOCKTON

On January 22, 2008, the City Council, by Resolution 08-0027 authorized the City Manager to execute an Agreement for Purchase of Water from the Woodbridge Irrigation District by the City of Stockton; now, therefore,

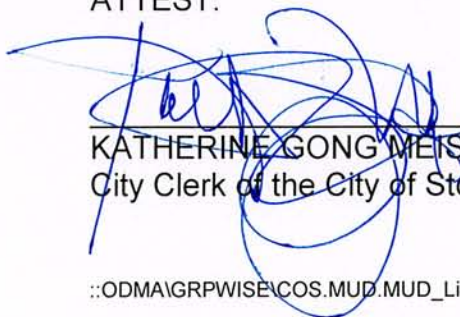
BE IT RESOLVED BY THE COUNCIL OF THE CITY OF STOCKTON, AS FOLLOWS:

1. The First Amendment to the Agreement for Purchase of Water from the Woodbridge Irrigation District by the City of Stockton is hereby approved.
2. The City Manager is hereby authorized to execute the First Amendment, a copy of which is attached hereto as Exhibit A and incorporated herein by this reference.
3. The City Manager is hereby authorized to take whatever actions are appropriate to carry out the purpose and intent of this resolution.

PASSED, APPROVED and ADOPTED FEB 23 2010.


ANN JOHNSTON, Mayor
of the City of Stockton

ATTEST:



KATHERINE GONG MEISSNER
City Clerk of the City of Stockton



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CITY ATTY
REVIEW

DATE


FEB 17 2010

Appendix H

City of Stockton Water Right Permit 21176

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**City of Stockton Water Right Permit 21176
Petition for Extension of Time**

The City of Stockton (“Stockton” or “City”) submits this Petition for Extension of Time (“Petition”) to the State Water Resources Control Board (“State Board”) for its consideration and approval. The Petition requests an extension of time to put water to beneficial use under Water Right Permit 21176 (“Permit 21176”).

The State Board will approve a petition for extension of time when the following criteria are met:

- (1) Due diligence was exercised;
- (2) The failure to comply with previous time requirements can be excused because of obstacles which could not reasonably be avoided;
- (3) That satisfactory progress will be made if an extension of time is granted; and
- (4) Approval of the extension is in the public interest. (Cal. Code Regs., tit. 23, § 844.)

As explained below, the City has satisfied all criteria and should be granted an extension of time for Permit 21176.¹

1. The City Has Exercised Due Diligence With the Construction and Operation of a New Drinking Water Treatment Project and Diversion of Water for Beneficial Use Under Permit 21176

The City’s water right is based on Water Code section 1485 where diversions for beneficial use cannot exceed the amount of water discharged by the City’s Regional Wastewater Control Tertiary Facility (RWCF). (Declaration of Robert Granberg in Support of Petition for Extension of Time to Put Water to Beneficial Use Under Permit 21176 [Granberg Decl.], ¶ 4, and Exh. A thereto.) The 15-day running average of diversions must be less than or equal to the 15-day running average of the discharges of properly treated effluent discharged by the RWCF. (*Ibid.*) In other words, the City can only divert as much water as it discharges to the San Joaquin River from the point of discharge located just downstream of the Stockton Swing Bridge on Highway 4. Under this indirect potable use strategy, the City removes only as much water as it puts into the San Joaquin River for treatment and delivery to its customers. This approach ensures the reliability of the City’s surface water supply and protects downstream beneficial uses by other Delta diverters.

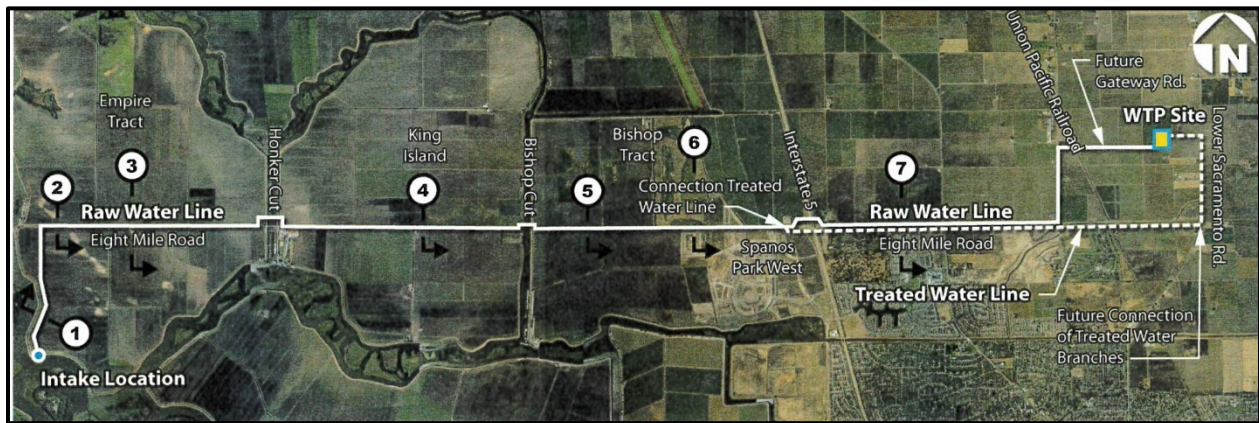
A. Delta Water Supply Project Construction and Operation

In September 2009, the City of Stockton Municipal Utilities Department (COSMUD), following years of extensive development, planning, design, and financing activities, began construction on the first phase of the Delta Water Supply Project (DWSP), which included the Drinking Water Treatment Plant

¹ In Application 30531, the City initially applied for a water right in excess of 33,600 acre-feet per year (af/yr). The State Board bifurcated the City’s Application 30531 into 30531A and 30531B, and ultimately issued Permit 21176 on Application 30531A. Application 30531B is not the subject of this Petition.

(DWTP) on approximately 60 acres off Lower Sacramento Road. The 30 million gallons per day (mgd) DWTP includes ozone pre-treatment, settling basins, and membrane ultra-filtration processes, followed by chloramine disinfection and distribution. The DWSP also includes 12 miles of 54-inch RCP raw water pipeline installed along Eight Mile Road capable of conveying 60 mgd, and the 80 mgd-capacity Intake Pump Station (IPS) diversion works housing four 250-horsepower pumps (each rated at 6,950 gallons per minute) and state-of-the-art fish screens located on the southwest tip of Empire Tract (see Figure 1 – Project Area Map). The DWSP was dedicated for operation in May 2012, 3-1/2 years ahead of the schedule mandated under Permit 21176. The cost to complete the project was more than \$220 million. It was the largest public works project in the City's history. (Granberg Decl., ¶ 5, and Exh. B thereto.)

FIGURE 1. Delta Water Supply Project Area Map



B. Diversions to Beneficial Use

The first phase of the DWTP is configured to treat 30 mgd, or 33,600 af/yr, which is the maximum annual diversion volume currently allowed for beneficial use under Permit 21176. (Granberg Decl., ¶ 3, and Exh. C thereto, pp. 5-7.) The City has acted with due diligence by constructing and initiating operation of the DWTP, and has consistently put to beneficial use water granted under Permit 21176, as shown in Table 1.

C. Use of Groundwater In Lieu of Surface Water

As documented in the City's Progress Reports on file with the State Board, in 2016, 2017, and 2018, the City used groundwater in lieu of surface water under Permit 21176. (Granberg Decl., ¶ 7, and Exh. D thereto.) The City met its water demand in 2016 by conjunctively using 71% of supply from surface water and 29% from groundwater. In 2017, demand was met with 87% surface water and 13% groundwater, and in 2018, with 76% surface water and 24% groundwater. In 2016, 2017, and 2018, the water available for diversion by the City, with Endangered Species Act (ESA) pumping limitations, exceeded the combined amount of water the City diverted under Permit 21176 and pumped from groundwater. (Granberg Decl., ¶ 7.) During those months, surface water was available for the City to use, but it forwent its right to use surface water in order to conjunctively use groundwater. This use of groundwater in lieu of surface water constitutes beneficial use under Permit 21176. Therefore, such groundwater use demonstrates diligence in putting Permit 21176 water to beneficial use.

**TABLE 1. City of Stockton Metropolitan Area (COSMA)
Water Demand and Diversions under Permit 21176 (acre-feet)**

| Water Year ⁽¹⁾ | Total COSMA Water Demand | Total RWCF Discharge | Water Available for Diversion by City Under Permit 21176 with ESA pumping restrictions | Water Diverted by City Under Permit 21176 |
|---------------------------|-----------------------------|-------------------------|---|---|
| 2012-13 | 64,445 | 24,685 | 18,346 | 11,202 |
| 2013-14 | 63,531 | 25,531 | 18,995 | 6,730 |
| 2014-15 | 56,699 | 25,546 | 19,066 | 4,612 |
| 2015-16 | 48,793 | 24,387 | 18,144 | 9,756 |
| 2016-17 | 49,700 | 28,711 | 21,361 | 9,951 |
| 2017-18 | 53,225 | 27,502 | 20,461 | 10,862 |
| 2018-19 | 56,113 | 26,753 | 19,904 | 9,855 |

⁽¹⁾ Water Year is April – March.

2. The City has Experienced Obstacles That Could Not Reasonably Have Been Avoided

A. Statewide Drought

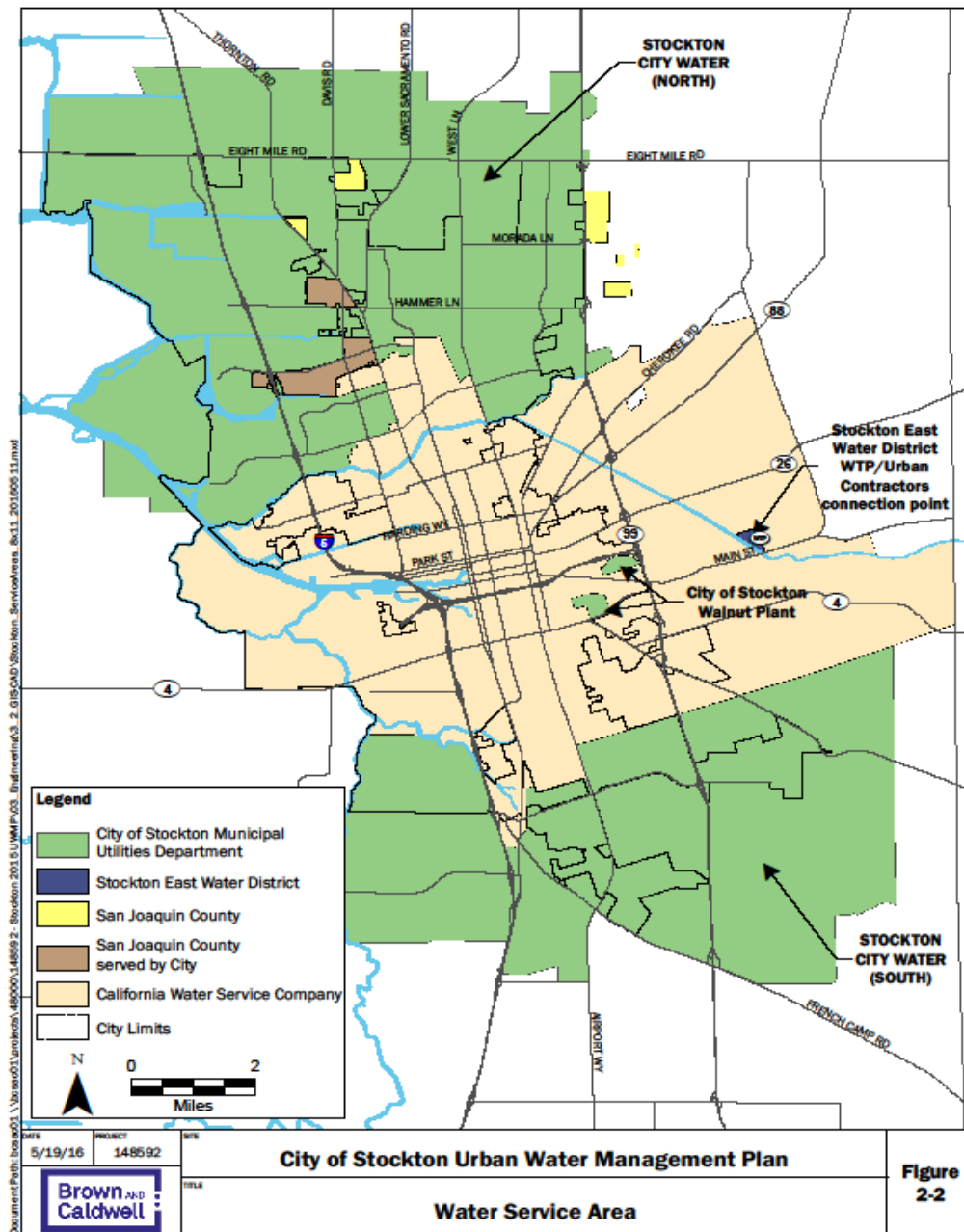
Due to the 2013-15 drought and state-mandated conservation measures, the City's overall water demand was reduced by nearly 29 percent in 2015 compared to 2013. Stockton continued to meet this demand through Permit 21176 water, and increased groundwater pumping to compensate for restricted surface supplies from the Stockton East Water District (Stockton East) and Woodbridge Irrigation District (WID). (Granberg Decl., ¶ 8, and Exh. E thereto.) The drought occurred shortly after the DWTP began operations under these reduced demands, but it allowed the City to demonstrate how its conjunctive use program, made possible by Permit 21176, could effectively manage hydrologic change during a significant drought. COSMUD experienced a significant reduction in revenue due to the historic drought and implementation of mandatory conservation measures that reduced demand for City water by nearly 29 percent. As a result, revenues declined by approximately \$3 million in 2014 and 2015. Due to the budget shortfall, COSMUD was forced to curtail its capital improvement program for water projects and fund only essential maintenance projects planned for Fiscal Year 2016-2017. (Granberg Decl., ¶ 9, and Exh. F thereto.)

The City continued its water management efforts in 2016, 2017, and 2018, as evidenced by the City's progress reports filed with the State Board, which demonstrate that the City has effectively managed its water resource portfolio. (See Granberg Decl., ¶ 7, and Exh. D thereto.) Through conjunctive use, Stockton has been able to reduce reliance on groundwater resources when surface water is available, and then conjunctively use groundwater in years when surface water is curtailed. As demand for water in Stockton continues to increase, and planned distribution system improvements are completed, the City will be able to utilize more of its Permit 21176 water while maintaining flexibility to conjunctively use groundwater resources.

B. Regulatory Requirements Have Limited Distribution of Permit 21176 Water

As shown in Figure 2, the COSMA is served by three retail water providers. COSMUD serves the north and south systems; the California Water Service Company (CalWater), an investor-owned utility, serves the central area; and San Joaquin County operates two water systems within the City boundaries. The City has distribution system interconnections to County service areas and operates a water system interconnected to the CalWater system. (Granberg Decl., ¶ 10.)

FIGURE 2. COSMA Water Providers



Application 30531, submitted to the State Board on January 6, 1996, defined the place of use coincident with the 1990 General Plan Boundary, which included the COSMUD north and south service areas, the CalWater service area, and a few San Joaquin County maintenance districts. (Granberg Decl., ¶ 11, and Exh. G thereto, p. 2-2, Figure 2-1.) To meet this projected demand, the City anticipated distribution of treated water throughout the place of use, including the CalWater service area, using existing interties. (*Id.* at Exh. G, p. 2-1.) Due to restrictions brought about by changes in drinking water quality regulations and a limitation of the system pipeline network, distribution of water diverted pursuant to Permit 21176 through the DWTP has only occurred within the COSMUD north service area and San Joaquin County maintenance districts, including Lincoln Village and Colonial Heights. (Granberg Decl., ¶ 12, and Exh. H thereto.)

C. Stockton Was Impacted by the Economic Downturn

Population and corresponding water demand were projected to increase from 73,526 af/yr in 2005 to 125,066 af/yr in 2030. (Granberg Decl., ¶ 13, and Exh. G thereto, p. 2-10, Table 2-3.) In 2005, the City projected an unmet water demand of 34,000 af by 2025 within the Permit 21176 place of use. (Granberg Decl., ¶ 14, and Exh. G thereto, p. 2-11.) In order to meet that increased demand, the City determined that 33,600 af/yr from the DWSP would need to be developed in order to meet demand, replace declining contracted supply, and maintain groundwater sustainability. The Stockton City Council adopted the Final Environmental Impact Report (FEIR) for the DWSP and approved the DWSP in late 2005, and Permit 21176 was granted in early 2006. (Granberg Decl., ¶ 15.) The subprime mortgage crisis from 2007 to 2009 significantly reduced economic growth in the entire region and led to an historic recession and slowdown in the construction of dwelling units in the City, both of which slowed urban population growth and water demand. (Granberg Decl., ¶ 16, and Exh. C thereto, p. 2-6.) These unforeseen events have resulted in less demand for Permit 21176 water than the City anticipated at the time it secured Permit 21176.

Thus, water use, discussed in Petition Section 1 above, reflects only a portion of the use anticipated at the time the City secured Permit 21176. Future water distribution system pipeline network connectivity, and development activity currently planned in the City's five-year capital improvement program, will ensure more surface water will be available to customers who now are served more predominately from groundwater supplies, thereby more fully utilizing water under Permit 21176. (Granberg Decl., ¶ 17, and Exh. I thereto, pp. 264-270, 277-278.)

D. Diversion Limitations to Protect Delta and Longfin Smelt

Permit 21176 provides for diversions at Empire Tract in all months; however, subsequent conditions imposed in 2008 as part of the United States Fish and Wildlife Service Biological Opinion on the Proposed City of Stockton's Delta Water Supply Project (BiOp), and California Department of Fish and Wildlife Incidental Take Permit No. 2081-2009-005-03 (ITP), limited the diversion rate and time available for diversions at the IPS between February and June in order to protect Delta and Longfin smelt. (Granberg Decl., ¶ 18, and Exhs. J-K thereto.) Condition 6.2 of the ITP imposes a 50 percent limitation on diversions from February 15 to March 15, and May 21 to June 15, and a prohibition on diversions from March 15 to May 20. These regulatory limitations have effectively reduced the quantity of water available under

Permit 21176 and will likely limit diversions for the foreseeable future. (Granberg Decl., ¶ 19, and Exh. J thereto, p. 10.)

Further, the BiOp and ITP only provide incidental take coverage for a maximum diversion rate of 30 mgd. (Granberg Decl., ¶ 20; Exh. J thereto, pp. 2, 10; and Exh. K thereto, pp. 48, 51.) To mitigate for ESA restrictions on diversions and ensure water treatment plant operations for the entire year, the City entered into a 40-year agreement to purchase Mokelumne River water from WID under pre-1914 water rights (Statement of Diversion and Use S015557). (Granberg Decl., ¶ 21, and Exh. L thereto, Recitals d.-h. & § 3, p. 5.) The City's water purchase contract with WID provides for delivery of up 6,500 af/yr to meet demand during Delta pumping restriction periods. (Granberg Decl., ¶ 22, and Exh. L thereto, § 1, p. 2.)

In summary, the historic drought of 2013-15 and economic downturn resulted in decreased water demand. These factors, together with distribution system restrictions, diversion limitations, and utility budget shortfalls, were significant obstacles to maximizing diversions under Permit 21176 that the City could neither anticipate nor avoid.

3. Satisfactory Progress Will Be Made If the State Water Board Grants an Extension to Stockton

A. Stockton Will Increase Use of Its Water Right

In spite of regulatory and other unexpected restrictions, the City will continue to make satisfactory progress to apply its full water right to beneficial use. The City's recently adopted update to its General Plan (2040) includes a specific action item to use its Permit 21176 water supply. It states that the City will "[c]ontinue to discharge treated effluent to the Delta and reuse that water through the City's California Water Code Section 1485 water right." (Granberg Decl., ¶ 23, and Exh. M, Action SAF-3.4C, p. 5-23.)

Consistent with the General Plan, the City is currently constructing a \$198 million modifications and improvements project for its RWCF that will ensure continued discharge of treated wastewater to the San Joaquin River, as the source of water permitted under Permit 21176. The modifications project will eliminate the evaporation basins used as oxidation ponds, which will reduce evaporation and increase discharges from the RWCF. By 2025, the City will have completed Phase 1 of the project, which will increase the RWCF's average annual discharges to approximately 31,420 af/yr. (Granberg Decl., ¶ 24.)

The City has revised its estimates for population growth and water demand, and while these figures are more modest than previously anticipated, the City is still on track to maximize use of its Permit 21176 water in the next 20 years. The City reevaluated its growth projections, and now anticipates that COSMUD service area population of approximately 182,000 will grow by 1.3% per year, such that the COSMUD service area population will be approximately 236,000 by 2040. (Granberg Decl., ¶ 25, and Exh. C thereto, p. 2-6, Table 2-3.) The City anticipates that its total water demand within the COSMUD service area will be approximately 44,465 af/yr by 2040. (Granberg Decl., ¶ 26, and Exh. C thereto, p. 3-5, Table 3-5.) Thus, by 2040, the City anticipates that its annual water demand within the COSMUD service area will exceed the 33,600 af total supply available under Permit 21176.

While the City anticipates annual water demand in 2040 in excess of its total Permit 21176 right, the RWCF discharge rate and associated allowable diversion rate, as well as ESA-driven pumping limits at the DWTP, create certain challenges to fully using Permit 21176 water by 2040. Table 2 presents the compilation of total COSMA potable water demand and corresponding RWCF treated wastewater discharges to the San Joaquin River, both historical and projected through 2040. Table 2 also presents anticipated water available for diversion under Permit 21176 with ESA-driven pumping restrictions. Current ESA restrictions limit diversions to 24,964 af/yr. Extending the time to license water use under this permit will allow the City additional time to fully utilize Permit 21176 water under current regulatory restrictions, evaluate potential modifications to current regulatory restrictions, and develop and implement plans to maximize use of Permit 21176 by 2040.

TABLE 2. COSMA Water Demand, RWCF Discharge, and Water Available for Diversion Under Permit 21176 Through 2040 (acre-feet)

| Water Year | Total COSMA Water Demand ^a | Total RWCF Discharge | Water Available for Diversion Under Permit 21176 with ESA Pumping Restrictions |
|------------|---------------------------------------|----------------------|--|
| 2012-13 | 64,445 | 24,685 | 18,346 |
| 2013-14 | 63,531 | 25,531 | 18,995 |
| 2014-15 | 56,699 | 25,546 | 19,066 |
| 2015-16 | 48,793 | 24,387 | 18,144 |
| 2016-17 | 49,700 | 28,711 | 21,361 |
| 2017-18 | 53,225 | 27,502 | 20,462 |
| 2018-19 | 56,113 | 26,753 | 19,904 |
| 2020 | 64,520 | 26,964 ^b | 20,062 |
| 2025 | 66,852 | 31,420 ^c | 23,377 |
| 2030 | 70,957 | 33,350 | 24,812 |
| 2035 | 73,810 | 34,691 | 24,964 ^d |
| 2040 | 76,905 | 36,145 | 24,964 |

^a 2020-2040 Demand from City of Stockton and California Water Service Company 2015 Urban Water Management Plans and County Service Area historical average

^b 2020 RWCF Discharge Equals 47% of Total COSMA Demand minus evaporative losses

^c Water Available in 2025-2040 assumes no evaporative losses at RWCF

^d Diversion limit under Permit 21176 with ESA pumping restrictions

As a first step to evaluating how the City might use its full entitlement under Permit 21176 during the extension period, the City has prepared a COSMA 2040 demand curve showing monthly demand assuming an annual demand of 44,465 af/yr. (See Table 3.) Given that the City's ability to meet this demand using its Permit 21176 water depends upon the 15-day running average of RWCF discharges, ESA-driven pumping restrictions, and the existing capacity of diversion infrastructure, Table 3 includes 2040 monthly RWCF discharge and diversion volumes. Table 3 also includes monthly water treatment volumes assuming existing DWTP infrastructure, which currently limits treatment capacity to 27 mgd.

Given the difference between the City's projected 2040 diversion capacity assuming existing infrastructure and regulatory limitations, and the face value of Permit 21176, Table 3 also includes potential monthly diversion volumes under the following assumed conditions:

- (1) The City obtains regulatory approval for an increase in the diversion rate up to the RWCF discharge rate during periods not currently restricted to a diversion rate less than 30 mgd;
- (2) The City obtains regulatory approval for an increase in the diversion rate up to the RWCF discharge rate during periods not currently restricted to a diversion rate less than 30 mgd and February and June, and
- (3) The City implements a groundwater banking program during the time period of the extension.

TABLE 3. 2040 Monthly Water Demand Curve (acre-feet)

| Month | 2040 Monthly Demand | 2040 RWCF Discharges | Current DWTP Treatment Capacity (at 27 mgd) | 2040 Diversion Capacity (1) | 2040 Diversion Capacity (2) | 2040 Diversion to Groundwater Banking (3) |
|-----------|---------------------------|----------------------------|---|-----------------------------------|-----------------------------------|--|
| | (a) | (b) | (c) | (d) | (e) | (f) |
| January | 2,371 | 3,281 | 2,569 | 3,281 | 3,281 | 910 |
| February | 2,239 | 3,265 | 2,320 | 2,277 | 3,265 | 1,026 |
| March | 2,684 | 3,560 | 2,569 | 690 | 690 | 575 |
| April | 3,178 | 3,129 | 2,486 | 0 | 0 | 0 |
| May | 4,394 | 2,850 | 2,569 | 506 | 506 | 0 |
| June | 4,958 | 2,367 | 2,367 | 1,874 | 2,367 | 0 |
| July | 5,438 | 2,822 | 2,569 | 2,822 | 2,822 | 253 |
| August | 5,200 | 3,121 | 2,569 | 3,121 | 3,121 | 552 |
| September | 4,676 | 2,919 | 2,486 | 2,919 | 2,919 | 434 |
| October | 4,001 | 3,038 | 2,569 | 3,038 | 3,038 | 470 |
| November | 2,900 | 2,916 | 2,486 | 2,916 | 2,916 | 430 |
| December | 2,426 | 2,878 | 2,569 | 2,878 | 2,878 | 452 |
| Total | 44,465 | 36,145 | 30,125 | 26,323 | 27,804 | 5,102 |

(d) Permit 21176 diversion capacity, increased to RWCF discharge limit in non-ESA months.

(e) Permit 21176 diversion capacity with no ESA restrictions in February and June, increased to RWCF discharge limit in non-ESA months.

(f) Potential diversion to groundwater storage ($f=e-a$ when c is greater than a , $f=e+c-a$ when Permit 21176 is ESA-restricted and a is greater than c , or $f=e-c$ when e is greater than c ; all assumed under Condition 2).

B. Potential Projects to Maximize Water Diversion and Beneficial Use

The City will more fully investigate and pursue the following projects in order to maximize use of Permit 21176 by 2040.

Increasing DWTP Treatment Capacity: The ability to fully capture RWCF discharges for potable water treatment could be enhanced through an increase in the DWTP's treatment capacity from 30 mgd to 40 mgd. This increase in capacity can be readily accomplished through a combination of operational changes that would increase the volume of water passing through the plant's membrane filters to more fully utilize their rated capacity, and additional membrane units readily added to the treatment train to further accommodate the increased capacity and operational flexibility.

Increasing IPS Diversion Rate: Permit 21176 allows for a diversion rate that shall not exceed 317 cubic feet per second (cfs) up to the annual amount of 33,600 af. Subsequent to permit issuance, the ITP limited the instantaneous diversion rate to 47 cfs, or 30 mgd. The City's ability to maximize the available diversions for potable water treatment depends on further authorizations from the California Department of Fish and Wildlife and U.S. Fish and Wildlife Service. As previously mentioned, plant capacity to treat more than 30 mgd can be readily accomplished through operational changes and additional membrane units.

DWSP Phase II - Recharge Basin Improvements Project: In addition to expanding the use of Permit 21176 water throughout the City's water distribution system network, the City continues to evaluate the potential of a groundwater banking project at the DWTP site to optimize use of Permit 21176, and plans to complete an engineering feasibility and geotechnical investigation. (Granberg Decl., ¶ 27, and Exh. G thereto, pp. 2-3, 5-6.) A groundwater banking project would allow the City to divert water under Permit 21176 when potable water demand is low, and bank the water for later use when potable water demand is high or when the diversion restrictions are in place due to the BiOp and ITP. A groundwater banking project would also allow the City to recharge the Eastern San-Joaquin Subbasin to maintain or restore the groundwater gradient necessary to limit saline intrusion. (See Cal. Code Regs., tit. 23, § 670 [defining water quality beneficial use].)

Initial groundwater infiltration testing was conducted at the potential recharge pond site in 2008. With an assumed infiltration pond size of 70 acres and a wetted period of 228 days per year, an estimated 12,768 af/yr could potentially be stored to the groundwater basin. A more detailed technical analysis of the timing and quantity of water supply will be necessary. For example, if all the available water was typically available during a three-month period per year, the potential storage volume would be 5,040 af/yr (based on a 90-day application period). (Granberg Decl., ¶ 28, and Exh. N thereto, pp. 5-6.)

To complete the Recharge Basin Improvements Project, the City is planning to complete additional engineering feasibility and environmental studies in the next year. These studies will demonstrate the validity of the groundwater banking project and allow for the permitting and construction of the project, which is estimated to be completed in 2024-25, to achieve the City's water supply and drought protection goals and provide benefits to the Eastern San Joaquin Subbasin. The City would also file, and the State Board will need to issue, an Underground Storage Supplement for Permit 21176 for the City to be able to divert and store water underground for later withdrawal and application to beneficial use. At the same time, the City would also file for the addition of Water Quality Use as a beneficial use of Permit 21176 water.

Potential Use by 2040: Table 3 demonstrates that in 2040, under current assumed water demand forecasts, the City could divert between 26,323 and 27,804 af/yr if the City is able to increase the diversion rate in months not currently restricted to a diversion rate less than 30 mgd in February and June. The ability of the City to direct the diversions shown in columns (e) and (f) to the DWTP for treatment and delivery require the City to successfully increase the DWTP treatment capacity through operational changes and installation of additional membrane units discussed above. Further, Table 3 demonstrates that the City could direct as much as 5,102 af/yr to groundwater recharge and conjunctive use, assuming maintenance of the existing DWTP treatment capacity of 27 mgd.

C. Revenue for Future Infrastructure Projects

The City undertook a water rate study in 2015 in order to determine the revenue requirement and possible future rate structure that would make up the funding gaps caused by reduced demand associated with future drought and regulations mandating conservation. The City adopted the recommendations of the water rate study completed in 2016 to incrementally raise water rates by 38.5 percent through 2021 and implement drought surcharges to ensure adequate revenue for its capital improvement projects. (Granberg Decl., ¶ 29, and Exh. O thereto.)

COSMUD will reevaluate its water rate structure under a new cost of service rate study scheduled for City Council adoption in 2021. The regular review of updated water rate structures will allow the City to fund capital improvement projects, which will ultimately allow the City to expand the use of Permit 21176 water through its distribution system to meet the increased demand for water and apply its water right to beneficial use.

4. Approval of the Extension of Time Is in the Public Interest

With 318,000 residents, Stockton is the largest municipality wholly within the Sacramento-San Joaquin River Delta. It has a large environmental justice community and higher than statewide average percentage of residents who live below the poverty line. Stockton derives a substantial percentage of its water supply from Permit 21176. The well-being of the City, its residents, economy, and public interest is thus inextricably linked to the Delta, the quantity and quality of Delta water supplies, and the Delta ecosystem.

A. Continue Stockton's In-Delta Municipal Diversion for Beneficial Use

Stockton relies on a portfolio of water supply sources and supporting infrastructure to meet existing and future demands. COSMUD provides potable drinking water to a service population of more than 180,000, which is approximately 55 percent of the M&I potable water demand of the COSMA. Stockton's water supply includes Permit 21176 contract surface water supplies and groundwater. Stockton's most significant source of water is its DWSP. The DWTP treats water diverted under Permit 21176 and water purchased from the WID from the Mokelumne River. Stockton's acquisition of Permit 21176 and construction of the DWTP was key in reducing the City's historic reliance on groundwater through an active and in-lieu conjunctive use program.

As an In-Delta Municipal water user, the City's DWSP project objectives have been consistent with the Delta Reform Act's coequal goals of improving water supply reliability and protecting, restoring, and enhancing the Delta ecosystem, as well as the Legislature's directive that "coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place." (Wat. Code, § 85054.)

B. Management of Surface and Groundwater Resources Under SGMA

Stockton's DWSP was developed with three main objectives; namely to (1) manage groundwater resources for environmental benefit and to ensure long-term sustainable yield, (2) satisfy future demands by conjunctively using groundwater and surface water, and (3) provide the COSMA with a more flexible water supply portfolio to control how and from what sources water demands are met. (Granberg Decl., ¶ 30, and Exh. P thereto.)

The Eastern San Joaquin Sub-basin is an historically overdrafted groundwater basin that has been subject to saline migration and elevated chloride levels. (Granberg Decl., ¶ 31, and Exhs. Q-R thereto.) A principle objective of the DWSP, as a conjunctive use project, was to reduce groundwater pumping in favor of available surface water supply, resulting in higher groundwater levels to protect the groundwater basin from further saline water intrusion and water quality degradation. Stockton is a recognized Groundwater Sustainability Agency (GSA) pursuant to the Sustainable Groundwater Management Act (SGMA) and a member of the Eastern San Joaquin Groundwater Authority (GWA), a joint powers authority consisting of 16 GSAs that overlie the subbasin and which is responsible for the management of the 2020 Groundwater Sustainability Plan (GSP). The success of the GSP's implementation, and the region as a whole, requires that the conjunctive use of surface water and groundwater be maximized in order to relieve the demand that was historically placed on the groundwater basin. (Granberg Decl., ¶ 32, and Exh. S thereto, p. ES-9.) Stockton's DWSP is a prime example of how urban water users can reduce reliance on and sustainably manage groundwater supplies by using available surface water for beneficial uses.

Providing Stockton with an extension of time will allow the City time to maximize use of Permit 21167 so it can maintain a diverse water supply portfolio and ensure that the City's residents have a reliable water supply at a reasonable cost. In addition to groundwater and the City's surface water right, the City derives an important portion of its supply through a treated water purchase contract with Stockton East. (Granberg Decl., ¶ 33, and Exh. T thereto.) Reductions in surface water deliveries from Stockton East Water District during the last drought placed additional reliance on the DWSP to meet urban demand and further protect groundwater resources, thereby demonstrating the importance of Permit 21176 to City customers during dry periods. Beginning in 2013 and before the drought had an impact on water supply to the COSMA, Stockton East water met 67 percent of the COSMA total demand, with the DWSP contributing 22 percent. In 2014, as the drought impact on water supply was becoming more apparent, Stockton East reduced deliveries to meet approximately 53 percent of the COSMA total demand. At the peak of the drought in 2015 and 2016, Stockton East water met approximately 45 percent of COSMA demand. In response, DWSP deliveries increased to 30 percent and 39 percent, respectively, with groundwater being used conjunctively to meet overall demand that was reduced throughout the COSMA due to conservation. At the end of the

drought in 2017, COSMA demand continued to be met predominantly through available surface supply provided by SEWD (50 percent) and DWSP (40 percent), thereby reducing groundwater to only 10 percent of demand. (Granberg Decl., ¶ 34.)

C. Enable Regional Water Resilience

Extending the time under which the City may divert and use the full amount of water authorized under Permit 21176 is consistent with and will further the goals of the state's Water Resilience Portfolio (July 2020) and its directive that state government "focus on enabling regional resilience." (See Granberg Decl. Exh. U, p. 17.)

In addition to operating a conjunctive use potable water system, maintaining the City's ability to access surface water so that it may bank water diverted from the Delta when demand is low (as discussed further above) will strengthen the resilience of the City's water system by enabling it to "maintain and diversify water supplies to enable flexibility as conditions change" under a warming climate. (See Granberg Decl. Exh. U, p. 15 ["Water infrastructure and management must be updated to allow capture of water when it is available in increasingly intense bursts and to provide water supplies and protect the environment during prolonged dry periods"].)

It will also enable Stockton to "prepare for new threats," including deeper droughts and hotter temperatures and associated water quality threats, such as harmful algal blooms, which may affect the City's ability to divert and use surface water in warmer months. (See Granberg Decl. Exh. U, pp. 5 [Executive Summary], 13-14.) Finally, retaining the City's access to Permit 21176 for direct use and groundwater banking will both enable water security and "make possible opportunity and prosperity" for the City's residents. (See Granberg Decl. Exh. U, p. 5 [Executive Summary].) In these many ways, the Petition furthers the Water Resilience Portfolio goals outlined by the state.

Granting Stockton's Petition is in the public interest because it would give the City the opportunity to continue to develop its Delta surface water supply to the greatest extent possible, thereby minimizing its use of local groundwater supplies and helping maintain and enhance the sustainable yield of the groundwater basin.

For the reasons stated herein, the City of Stockton respectfully requests that the State Board approve its Petition.

**STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD**

DIVISION OF WATER RIGHTS

PERMIT FOR DIVERSION AND USE OF WATER

PERMIT 21176

Application 30531A of City of Stockton
 c/o Department of Municipal Utilities
 2500 Navy Drive
 Stockton, CA 95206-1191

filed on April 18, 1996, has been approved by the State Water Resources Control Board (State Water Board)
SUBJECT TO PRIOR RIGHTS and to the limitations and conditions of this permit.

Permittee is hereby authorized to divert and use water as follows:

1. Source of water

| |
|-------------------|
| Source: |
| San Joaquin River |
| |
| |

| |
|------------------------------|
| Tributary to: |
| Sacramento-San Joaquin Delta |
| |
| |

within the County of San Joaquin

2. Location of point of diversion

| By California Coordinate System of 1927 in Zone 3 | 40-acre subdivision of public land survey or projection thereof | Section (Projected) | Township | Range | Base and Meridian |
|--|---|------------------------|----------|-------|----------------------|
| POD #1: N563,400 - E1,713,150 | NE¼ of NE¼ | 11 | 2N | 4E | MD |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| 3. Purpose of use | 4. Place of use | Section (Projected)* | Township | Range | Base and Meridian | Portions of C.M. Weber Grant with Place of Use boundaries and Township and Range |
|-----------------------------|---|---------------------------------------|----------|-------|-------------------------|--|
| Municipal and Industrial | Portions of: | 2, 12, 24, 36, 25 | 2N | 5E | MD | None |
| | All of: | 1 | 2N | 5E | MD | |
| | Portions of: | 1, 12 | 1N | 5E | MD | None |
| | Portions of: | 7, 13, 18, 21, 22, 23, 33 | 2N | 6E | MD | All |
| | All of: | 1-6, 8-12, 14-17, 19, 20, 29-32 | 2N | 6E | MD | |
| | Portions of: | 4, 15, 18, 27, 34, 21, 28, 33 | 1N | 6E | MD | All |
| | All of: | 5-9, 16, 17, 22 | 1N | 6E | MD | |
| | Portions of: | 3, 5, 9, 10 | 1S | 6E | MD | All except portions of sections G and 3 |
| | All of: | 4 | 1S | 6E | MD | |
| | Portions of: | 4, 8, 9, 17, 18 | 2N | 7E | MD | All except portions of sections 81- 86, H, M, 93 and 94 |
| | All of: | 5, 6, 7 | 2N | 7E | MD | |
| | Portions of: | 1, 11, 12, 25, 26 | 1N | 7E | MD | All except portions of sections M, 86, 93, and 94 |
| | All of: | 13, 14, 23, 24, 27, 28, 33, 34 | 1N | 7E | MD | |
| | Portions of: | 3, 4, 5, 8, 9, 10 | 1S | 7E | MD | All except portions of sections O and 27 |
| | All of: | None | 1S | 7E | MD | |
| | Total area within Place of Use = 81,441 acres | | | | | |

The place of use is shown on map dated October 27, 1997 filed with the State Water Board.

5. The water appropriated shall be limited to the quantity, which can be beneficially used, and shall not exceed 317 cubic feet per second to be diverted from January 1 to December 31 of each year. The maximum amount diverted under this permit shall not exceed 33,600 acre-feet per year. (0000005A)
6. Construction work of Delta Water Supply Project facilities developed under this permit: (a) the point of diversion (water intake site), (b) the raw water and treated water transmission pipelines, and (c) the 30 million gallon per day water treatment facility, shall be prosecuted with reasonable diligence and completed by December 31, 2015. Complete application of the water to the authorized uses under this permit shall be completed by December 31, 2020. (00000009)
7. The amount authorized for appropriation may be reduced in the license if investigation warrants. (00000006)
8. Progress reports shall be submitted promptly by permittee when requested by the SWRCB until a license is issued. (00000010)
9. Permittee shall allow representatives of the SWRCB and other parties, as may be authorized from time to time by said SWRCB, reasonable access to project works to determine compliance with the terms of this permit. (00000011)
10. Pursuant to California Water Code sections 100 and 275, and the common law public trust doctrine, all rights and privileges under this permit and under any license issued pursuant thereto, including method of diversion, method of use, and quantity of water diverted, are subject to the continuing authority of SWRCB in accordance with law and in the interest of the public welfare to protect public trust uses and to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said water.

The continuing authority of the SWRCB may be exercised by imposing specific requirements over and above those contained in this permit with a view to eliminating waste of water and to meeting the reasonable water requirements of permittee without unreasonable draft on the source. Permittee may be required to implement a water conservation plan, features of which may include but not necessarily be limited to (1) reusing or reclaiming the water allocated; (2) using water reclaimed by another entity instead of all or part of the water allocated; (3) restricting diversions so as to eliminate agricultural tailwater or to reduce return flow; (4) suppressing evaporation losses from water surfaces; (5) controlling phreatophytic growth; and (6) installing, maintaining, and operating efficient water measuring devices to assure compliance with the quantity limitations of this permit and to determine accurately water use as against reasonable water requirements for the authorized project. No action will be taken pursuant to this paragraph unless the SWRCB determines, after notice to affected parties and opportunity for hearing, that such specific requirements are physically and financially feasible and are appropriate to the particular situation.

The continuing authority of the SWRCB also may be exercised by imposing further limitations on the diversion and use of water by the permittee in order to protect public trust uses. No action will be taken pursuant to this paragraph unless the SWRCB determines, after notice to affected parties and opportunity for hearing, that such action is consistent with California Constitution Article X, Section 2; is consistent with the public interest; and is necessary to preserve or restore the uses protected by the public trust.

(00000012)

11. The quantity of water diverted under this permit and under any license issued pursuant thereto is subject to modification by the SWRCB if, after notice to the permittee and an opportunity for hearing, the SWRCB finds that such modification is necessary to meet water quality objectives in water quality control plans which have been or hereafter may be established or modified pursuant to Division 7 of the Water Code. No action will be taken pursuant to this paragraph unless the SWRCB finds that (1) adequate waste discharge requirements have been prescribed and are in effect with respect to all waste discharges, which have any substantial effect upon water quality in the area involved, and (2) the water quality objectives cannot be achieved solely through the control of waste discharges. (0000013)
12. This permit does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & G. Code, §§ 2050 - 2097) or the federal Endangered Species Act (16 U.S.C.A. §§ 1531 - 1544). If a "take" will result from any act authorized under this water right, the permittee shall obtain authorization for an incidental take prior to construction or operation of the project. Permittee shall be responsible for meeting all requirements of the applicable Endangered Species Act for the project authorized under this permit. (0000014)
13. Permittee shall maintain records of the amount of water diverted and used to enable the State Water Resources Control Board to determine the amount of water that has been applied to beneficial use pursuant to Water Code Section 1605. (0000015)
14. No work shall commence and no water shall be diverted, stored or used under this permit until a copy of a stream or lake alteration agreement between the State Department of Fish and Game and the permittee is filed with the Division of Water Rights. Compliance with the terms and conditions of the agreement is the responsibility of the permittee. If a stream or lake agreement is not necessary for this permitted project, the permittee shall provide the Division of Water Rights a copy of a waiver signed by the State Department of Fish and Game. (0000063)
15. Permittee shall comply with the following conditions that are derived from the agreements and stipulations between permittee and the California Department of Water Resources, the United States Bureau of Reclamation, the San Joaquin River Group Authority, dated November 22, 2004, November 29, 2004, September 27, 2005, respectively, and filed with the State Water Resources Control Board:
 - a. In order to ensure compliance with Water Code section 1485, the permittee shall conduct its diversions as follows:
 1. The permittee shall maintain records of (a) daily diversion of water from the Delta at its Delta Diversion Facility and (b) daily discharge of effluent to the Delta at its Regional Wastewater Control Facility.
 2. The 15-day running average of diversions from the Delta under this permit shall be less than or equal to the 15-day running average of discharges of properly treated effluent discharged from the Regional Wastewater Control Facility into the San Joaquin River. The term "properly treated effluent" means effluent that meets the requirements of the Central Valley Regional Water Quality Control Board.
 3. The permittee shall maintain weekly summary records of diversions, discharges and computations specified in paragraphs 15a.1 and 15a.2.

4. The permittee shall post on the World Wide Web (WWW) Internet for public monitoring purposes, within five (5) days of the diversion or discharge, the daily total amount of water in acre-feet diverted from the Delta at the permittee's diversion facility, the daily total amount of water in acre-feet of properly treated effluent discharged into the San Joaquin River from the permittee's Regional Wastewater Control Facility, and the weekly summary records specified in paragraph 15a.3.

Inclusion in this permit of certain provisions of the referenced agreements shall not be construed as disapproval of other provisions of the agreements or as affecting the enforceability, as between the parties, of such other provisions insofar as they are not inconsistent with the terms of this permit.

(0000024)

16. Permittee shall consult with the Division of Water Rights and, within one year from the date of this permit, shall submit to the State Water Resources Control Board its Urban Water Management Plan as prepared and adopted in conformance with section 10610, et seq. of the California Water Code, supplemented by any additional information that may be required by the Board.

All cost-effective measures identified in the Urban Water Management Plan and any supplements thereto shall be implemented in accordance with the schedule for implementation found therein.

(0000029A)

17. No water shall be used under this permit until permittee has filed a report of waste discharge with the California Regional Water Quality Control Board, Central Valley Region, pursuant to Water Code Section 13260, and the Regional Board or State Water Resources Control Board has prescribed waste discharge requirements or has indicated that waste discharge requirements are not required. Thereafter, water may be diverted only during such times as all requirements prescribed by the Regional Board or State Board are being met. No point source discharges of waste to surface water shall be made unless waste discharge requirements are issued by a Regional Board or the State Board. A discharge to ground water without issuance of a waste discharge requirement may be allowed if, after filing the report pursuant to Section 13260:

- (1) the Regional Board issues a waiver pursuant to Section 13269, or
- (2) the Regional Board fails to act within 120 days of the filing of the report.

No permittee shall be required to file a report of waste discharge pursuant to Section 13260 of the Water Code for percolation to ground water of water resulting from the irrigation of crops.

(0290101)

18. No water shall be diverted under this permit except through a fish screen on the intake to the diversion structure, designed to meet the California Department of Fish and Game (CDFG) and the National Marine Fisheries Service (NMFS) screening criteria to protect all life history stages of emigrating juvenile Chinook salmon (*Oncorhynchus tshawytscha*), steelhead (*Oncorhynchus mykiss*) and Delta smelt (*Hypomesus transpacificus*). The screen will meet the following specifications:

- The screen will be oriented such that flow past the screen will be parallel to river flow.
- The screen will be designed so that a maximum uniform approach velocity of 0.2 feet per second as well as an adjustment for flow patterns will be provided across the face of the screen.

- The screen will be fitted with an automatic rotating brush or hydraulic screen cleaner that cleans the entire fish screen once every five minutes, while the diversion is in operation. Except during periods of tidal flow reversal, sweeping flow velocity will be at least twice the approach velocity.
- Screen openings will not exceed 1.75 millimeters with a minimum opening of 27 percent based on the salmonid fry criterion.
- The screen will be made of rigid, corrosion-resistant material with no sharp edges or projections (stainless-steel or copper-nickel alloy using wedge wire.)

(0000214)

19. No water shall be diverted until permittee has completed a monitoring and response plan for larval delta smelt (*Hypomesus transpacificus*). Monitoring for larval delta smelt will be conducted annually between February 15 and July 31 to detect the presence of larval delta smelt and trigger the implementation of the response plan, if necessary. The densities and geographic distribution of smelt will be used to identify those periods when larval delta smelt are not in the area and no operational changes are necessary. An annual monitoring and response report will be submitted to the Chief, Division of Water Rights by September 15.

Permittee shall submit the monitoring and response plan to the CDFG, NMFS and United States Fish and Wildlife Service (USFWS) for review. Permittee shall submit evidence of the review and the completed response plan to the Chief, Division of Water Rights.

In consultation with CDFG, permittee shall complete a census of larval delta smelt to determine the effectiveness of the response plan. If the response plan measures are not effective in protecting larval smelt from entrainment, permittee shall identify and develop alternative measures in cooperation with USFWS and CDFG. Permittee shall submit evidence of the effectiveness of the response plan or the alternative measures to the Chief, Division of Water Rights. Permittee shall be responsible for the construction, operation, and maintenance of the required facility.

Permittee shall mitigate for the impacts of the project to special-status species identified in the FEIR. Permittee may either submit to the Chief, Division of Water Rights, evidence that the Project is approved for participation in the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) and comply with the requirements under that program, or permittee may obtain the necessary individual permits from the appropriate regulatory agency (CDFG or USFWS). Evidence of regulatory agency review will be submitted to the Chief, Division of Water Rights.

20. The State Water Board reserves jurisdiction to amend this permit, after notice and opportunity for hearing, to reduce the maximum amount authorized to be diverted or require other appropriate action if the State Water Board receives new substantial evidence showing that, due to the diversion of water under this permit, the SWP or the federal CVP is required to forego exports from the southern Delta or release from upstream storage additional water to meet salinity objectives in the Delta compared with the amount of water that the SWP or the federal CVP would have to forego exporting or release from upstream storage for salinity control in the absence of diversions under this permit.
21. In accordance with Public Resources Code, section 21167.3, the City is authorized under this permit to proceed with the project at the City's risk.

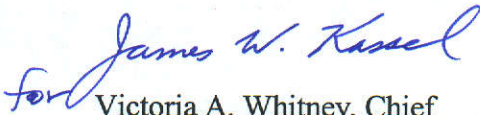
This permit is issued and permittee takes it subject to the following provisions of the Water Code:

Section 1390. A permit shall be effective for such time as the water actually appropriated under it is used for a useful and beneficial purpose in conformity with this division (of the Water Code), but no longer.

Section 1391. Every permit shall include the enumeration of conditions therein which in substance shall include all of the provisions of this article and the statement that any appropriator of water to whom a permit is issued takes it subject to the conditions therein expressed.

Section 1392. Every permittee, if he accepts a permit, does so under the conditions precedent that no value whatsoever in excess of the actual amount paid to the State therefore shall at any time be assigned to or claimed for any permit granted or issued under the provisions of this division (of the Water Code), or for any rights granted or acquired under the provisions of this division (of the Water Code), in respect to the regulation by any competent public authority of the services or the price of the services to be rendered by any permittee or by the holder of any rights granted or acquired under the provisions of this division (of the Water Code) or in respect to any valuation for purposes of sale to or purchase, whether through condemnation proceedings or otherwise, by the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State, of the rights and property of any permittee, or the possessor of any rights granted, issued, or acquired under the provisions of this division (of the Water Code).

STATE WATER RESOURCES CONTROL BOARD

for James W. Kassel

Victoria A. Whitney, Chief
Division of Water Rights

Dated: March 8, 2006

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Appendix I

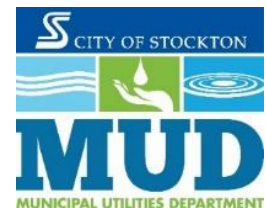
Water Shortage Contingency Plan

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Water Shortage Contingency Plan

PREPARED FOR

City of Stockton
Municipal Utilities Department



PREPARED BY



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LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|--------|---|
| AB | Assembly Bill |
| AWSDA | Annual Water Supply and Demand Assessment |
| CF | Cubic Feet |
| City | City of Stockton |
| COSMUD | City of Stockton Municipal Utilities Department |
| CWC | California Water Code |
| DWR | Department of Water Resources |
| DWTP | Delta Water Treatment Plant |
| ERP | Emergency Response Plan |
| MOU | Memorandum of Understanding |
| PIO | Public Information Officer |
| SB | Senate Bill |
| SEWD | Stockton East Water District |
| SMC | Stockton Municipal Code |
| UWMP | Urban Water Management Plan |
| WID | Woodbridge Irrigation District |
| WSCP | Water Shortage Contingency Plan |
| WWTP | Wastewater Treatment Plant |

Water Shortage Contingency Plan

A water shortage may occur due to a number of reasons, such as population growth, climate change, drought, and catastrophic events. Drought, regulatory action constraints, and natural and manmade disasters may occur at any time. A water shortage means that the water supply available is insufficient to meet the normally expected customer water use at a given point in time.

This plan presents the City of Stockton's (City) Water Shortage Contingency Plan (WSCP). The WSCP describes the City's strategic plan in preparation for and responses to water shortages with a goal to proactively prevent catastrophic service disruptions. It includes water shortage levels (also called "stages") and associated shortage response actions that will be implemented in the event of a water supply shortage. As part of the WSCP, the City's legal authorities, communication protocols, compliance and enforcement, and monitoring and reporting are included. The Stockton Municipal Code (SMC) Chapter 13.28 Water Conservation and SMC Chapter 13.32 Water Shortage Emergencies are complementary chapters that support the City's WSCP, and are available at <https://qcode.us/codes/stockton/>, under Title 13. These chapters have been updated over time.

In 2018, the California State Legislature (Legislature) enacted two policy bills, (Senate Bill (SB) 606 (Hertzberg) and Assembly Bill (AB) 1668 (Friedman)) (2018 Water Conservation Legislation), to establish a new foundation for drought planning to adapt to climate change and the resulting longer and more intense droughts in California. The 2018 Water Conservation Legislation set new requirements for water shortage contingency planning.

The City's WSCP has been updated so that it is consistent with the 2018 Water Conservation Legislation requirements. The City plans to modify SMC Chapter 13.28 and SMC Chapter 13.32 to support these updates. The City intends for this WSCP to be dynamic, so that it may assess response action effectiveness and adapt to emergencies and catastrophic events. Refinement procedures and adoption requirements are provided in this plan to allow the City to modify this WSCP outside of the Urban Water Management Plan (UWMP) process.

1.0 WATER SUPPLY RELIABILITY ANALYSIS

Chapters 6 and 7 of the City's 2020 UWMP present the City of Stockton Municipal Utilities Department (COSMUD) water supply sources and reliability, respectively. Findings show the COSMUD will have adequate water supply through 2045 for normal year, single dry-year, multiple dry-year water supply conditions and account for increased water demands due to planned developments and increased projected population.

Statewide water supply conditions, changes in groundwater levels, subsidence, and actions by surrounding agencies, may impact the COSMUD available water supply. For the COSMUD, a water shortage condition occurs when the supply of potable water available cannot meet ordinary water demands for human consumption, sanitation, fire protection, and other beneficial uses. The COSMUD may be able to foresee its water shortage condition in some cases; however, in other cases, the water shortage may be caused by an unforeseen sudden or emergency event. In general, the COSMUD water supply conditions may be affected by the following issues:

- Delta Water Treatment Plant (DWTP) supply availability and/or production issues
- Stockton East Water District (SEWD) supply availability and/or production issues
- North Stockton and/or South Stockton well production reduction and/or water quality issues

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Approximately three months prior to the beginning of the water year (April 1), the City determines the expected purchased water and surface water supply availability. In other cases, the City may experience unforeseen water shortage when catastrophic interruption of water supplies occurs due to regional power outage, an earthquake, or other potential emergency events. In events of a water shortage condition, shortage response actions may be taken to reduce water demand and augment water supplies, as summarized in Table 1 through Table 4.

In future years, the City will conduct an annual water supply and demand assessment in accordance with Section 2. The analysis associated with this WSCP was developed in the context of the COSMUD water supply sources and reliability.

2.0 ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT PROCEDURES

Beginning July 1, 2022, California Water Code (CWC) §10632.1 requires water suppliers to submit an Annual Water Supply and Demand Assessment (AWSDA). Water suppliers will also be required to submit an Annual Water Shortage Assessment Report beginning July 1, 2022. This WSCP provides the procedures for the COSMUD to conduct its Annual Water Supply and Demand Assessment. The findings from that assessment will provide information for the COSMUD Annual Water Shortage Assessment Report.

The procedures provided in this section are intended to assist the COSMUD in planning for potential, foreseeable shortage in water supplies. These procedures provide the steps the COSMUD needs to take that may lead to declaring a water shortage emergency and associated water shortage levels (see Section 3) and implementation of water shortage response actions (see Section 4).

2.1 Decision-Making Process

The decision-making process described below will be used by the COSMUD to determine its water supply reliability in a consistent manner annually. The COSMUD may adjust this process for improved decision-making during implementation.

A team of COSMUD staff is responsible for the preparation of the AWSDA and Annual Water Shortage Assessment Report, and submittal of the reports to the Department of Water Resources (DWR) by July 1 of each year. The Team will gather key data inputs described in Section 2.2 and conduct the assessment in accordance with Section 2.3. By April 2021, COSMUD will finalize its assessment based on confirmation of water supply allocations from SEWD and Woodbridge Irrigation District (WID). The team will complete the AWSDA and develop the Annual Water Shortage Assessment Report based on analysis of data and information. The report will include findings and make recommendations for actions, as needed. The team will present the AWSDA and Annual Water Shortage Assessment Report to the COSMUD Director, or his designee, for review. After review, the AWSDA and Annual Water Shortage Assessment Report will be finalized and resubmitted to the COSMUD Director, or designee, for approval. The final approved documents will be submitted to DWR by July 1 each year.

In the event that the AWSDA finds that available supply will not meet expected demands, the team will prepare to present the finalized assessment to the City Council, along with recommendations on water shortage condition determination and shortage response actions. The team will prepare a resolution (as needed) approving determinations and actions for consideration and authorization by City Council.

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Recommended actions may include declaration of a water shortage emergency, declaration of a water shortage level, and water shortage actions as needed.

Additionally, the team will coordinate interdepartmentally, with the region's water service providers, and with San Joaquin County for the possible proclamation of a local emergency.

The City Council will conduct a duly noticed public hearing and receive presentation of the finalized assessment recommendations on water shortage condition determination and actions. The City Council will determine if a water shortage condition exists. If needed, the City Council may adopt a resolution to declare a water shortage emergency and water shortage level, and authorize water shortage response actions.

After the City Council acts, the team will prepare the City's Annual Water Shortage Assessment Report using finalized the AWSDA, and incorporate City Council determinations and approved actions for submittal to DWR by July 1, 2021. After City Council acts, COSMUD will implement the water shortage responses as authorized by City Council.

Due to variations in climate and hydrologic conditions, the schedule for the finalization of the AWSDA and Annual Water Shortage Assessment Report may be adjusted. The intent of the proposed schedule is to allow shortage response actions to effectively address anticipated water shortage conditions in timely manner, and to comply with the State's reporting requirements.

2.2 Key Data Inputs

The AWSDA requires the evaluation of supply and demands for the current year and one dry year that is assumed to follow the current year. The planned water supply and demand for the current year and a subsequent dry year will be used to evaluate the COSMUD water supply reliability.

Planned water supplies will be used as input to the AWSDA for the current year and the following one dry year. In planning for water supplies, the following factors are considered, as applicable and appropriate:

1. Hydrological conditions
2. Regulatory conditions
3. Contractual constraints
4. Surface water and groundwater basin conditions
5. North Stockton and/or South Stockton groundwater well production limitations
6. Infrastructure capacity constraints or changes
7. Capital improvement projects implementation
8. DWTP supply availability and/or production issues; Intake structure issues
9. SEWD supply availability and/or production issues

Planned water supply sources and quantities will be described and be reasonably consistent with the supply projections in the City's last updated UWMP Chapter 6 (Water Supply Characterization). Should the supply sources and projections deviate significantly from projections, an explanation for the difference will be provided.

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Planned unconstrained water demands will be used as input to the AWSDA for the current year and the following one dry year. Unconstrained water demands are customer demands where no water conservation measures are in effect. In planning for water demands, the following factors are considered, as applicable and appropriate:

1. Weather conditions
2. Water year type
3. Population changes (for example, due to development projects)
4. Anticipated new demands (for example, changes to land use)
5. Pending policy changes that may impact demands
6. Infrastructure operations

Planned water demand types and quantities will be described and be reasonably consistent with the demand projections in the City's last updated UWMP Chapter 4 (Customer Water Use). Should the demand projections deviate significantly from projections, an explanation for the difference will be provided.

2.3 Assessment Methodology

In preparing the AWSDA, the COSMUD will follow the assessment methodology and evaluation criteria to evaluate the water supply reliability for the current year and following one dry year.

The COSMUD uses a spreadsheet to plan for current year and future year water demands. Planned supply and demand inputs described in Section 2.2 will be entered in the spreadsheet in annual increments. As needed, the increments may be revised to monthly or seasonal periods to more closely evaluate specific conditions and needs.

Supply and demand will be compared to determine the reliability of the COSMUD water supplies in the current year and the following one dry year. The COSMUD water supplies for the current year and the following dry year will be determined as reliable if water supply is sufficient to meet the planned water demands. If water supply is insufficient to meet planned water demands in the current year and/or the following dry year, the extent of the water shortage condition will be determined, and the COSMUD will prepare shortage response actions in accordance with this WSCP.

The AWSDA findings will be presented to the City Council, along with recommendations for action for City Council consideration.

3.0 SIX STANDARD WATER SHORTAGE STAGES

To provide a consistent regional and statewide approach to conveying the relative severity of water supply shortage conditions, the 2018 Water Conservation Legislation mandates that water suppliers plan for six standard water shortage levels that correspond to progressive ranges of up to 10, 20, 30, 40, 50 percent, and greater than 50 percent shortage levels from the normal reliability condition. Each shortage condition should correspond to additional actions water suppliers would implement to meet the severity of the impending shortages.

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In Table 1, the City's water shortage stages, corresponding water shortage level conditions, and shortage response actions are identified. The City's water shortage stages apply to both foreseeable and unforeseeable water supply shortage conditions. Water shortage is the gap between available supply and planned demands.

As described in Section 2, the COSMUD will conduct an AWSDA to determine its water supply condition for the current year and the following one dry year. The preparation of AWSDA helps the City ascertain the need to declare a water shortage emergency and water shortage stage. In other cases, the City may need to declare a water shortage emergency due to unforeseen water supply interruptions. When the COSMUD anticipates or identifies that water supplies may not be adequate to meet the normal water supply needs of its customers, the City Council may determine that a water shortage exists and consider a resolution to declare a water shortage emergency and associated stage. The shortage stage provides direction on shortage response actions.

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

| Shortage Level (Stages) | Percent Shortage Range | Shortage Response Actions (Narrative description) |
|---|------------------------|--|
| 1 | Up to 10% | Mandatory Water Conservation per SMC Chapter 13.28 |
| 2 | Up to 20% | Water Shortage Emergency per SMC Chapter 13.32 |
| 3 | Up to 30% | Water Shortage Emergency per SMC Chapter 13.32 |
| 4 | Up to 40% | Water Shortage Emergency per SMC Chapter 13.32 |
| 5 | Up to 50% | Water Shortage Emergency per SMC Chapter 13.32 |
| 6 | More than 50% | Water Shortage Emergency per SMC Chapter 13.32* |
| NOTES: *Proposed revisions to SMC 13.32.060 will address water shortage conditions greater than 50 percent. | | |

The City's 2015 UWMP included five stages that addressed up to 50 percent gap between supply and demand. In Table 1, the five stages are reorganized to align with the State's standard stages and a sixth stage is added to address a 50 percent or greater gap between supply and demand.

The current SMC Chapters 13.28 and 13.32 address water use regulations that are in place at all times (SMC §13.28.030 Regulations), as well as additional demand reduction actions that would be enacted by the City for each water shortage stage (SMC §13.32.060 Stages of Water Shortage Emergency). Concurrent with the preparation of this UWMP, the City is in the process of updating SMC Chapters 13.28 and 13.32 to address water shortage levels up to and greater than 50 percent.

4.0 SHORTAGE RESPONSE ACTIONS AND EFFECTIVENESS

CWC §10632 (a)(4) requires shortage response actions that align with the defined shortage levels. The City's shortage response actions consist of a combination of demand reduction, supply augmentation, and operational changes. The City's suites of response actions are dependent on the event that precipitates a

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water shortage stage, the time of the year the event occurs, the water supply sources available, and the condition of its water system infrastructure.

The COSMUD plans to use a balanced approach, combining supply augmentation, demand reduction, and operational changes to respond to the event and the resulting water shortage stage. The COSMUD will adapt its implementation of response actions to close the gap between water supplies and water demand and meet the water use goals associated with the declared water shortage stage.

The COSMUD water system is fully metered, from production to individual customer meters. System-wide water production and water use can be compared to previous periods. This monitoring allows the COSMUD to assess water system supplies and demands, and compare them with its water shortage response objective. The COSMUD may then adjust its shortage response actions, allowing it to equalize demands with available water supplies. For example, the COSMUD may intensify its public outreach or more vigorously enforce compliance to water use prohibitions if needed water demand reduction goals are not met for any specific stage. Conversely, the COSMUD may reduce public outreach frequency or decrease compliance actions if demand reduction goals are exceeded.

The shortage response actions discussed below may be considered as tools that allow the COSMUD to respond to water shortage conditions. Because the COSMUD may continuously monitor and adjust its response actions to reasonably equate demands with available supply, the extent to which the gap between water supplies and water demand will be reduced by implementation of each action is difficult to quantify and therefore is provided as an estimate. Certain response actions, such as public outreach and enforcement, support the effectiveness of other response actions and do not have a quantifiable effect on their own.

4.1 Demand Reduction

During water shortage conditions, the City plans to close the gap between water supply and water demand by implementing demand reduction action categories shown in Table 2. The water shortage stage for which each demand reduction action will commence implementation is also provided, along with the estimate of extent that the action will reduce the shortage gap. Table 2 also indicates if the City plans to use compliance actions such as penalties, charges, or other enforcement actions for each demand reduction action.

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Table 2. Water Shortage Contingency Plan Demand Reduction Actions (DWR Table 8-2)

| Shortage Level (Stages) | Demand Reduction Actions <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.</i> | How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i> | Additional Explanation or Reference <i>(optional)</i> | Penalty, Charge, or Other Enforcement? <i>For Retail Suppliers Only Drop Down List</i> |
|-------------------------|--|---|--|---|
| 1 | Expand Public Information Campaign | Studies have shown that a targeted public information campaign during a drought can reduce water use by 7 - 8% | City to encourage water customers and users to implement best water management and conservation practices listed in Stage 2. | No |
| 1 | Other - Prohibit use of potable water for washing hard surfaces | Boosts other methods - not readily quantifiable | | Yes |
| 1 | Water Features - Restrict water use for decorative water features, such as fountains | Boosts other methods as a public display of drought conservation, difficult to quantify | Recirculation of water only. | Yes |
| 1 | Decrease Line Flushing | Depends on extent and frequency of current flushing activities | | No |
| 1 | Landscape - Limit landscape irrigation to specific times | Depends on times that irrigation will be allowed, but can reduce water use by 20-25 gallons per day per household | | Yes |
| 1 | Implement or Modify Drought Rate Structure or Surcharge | Generally, the cost of water does not significantly effect water use. The cost increase needs to be significant to result in water use reduction. | Municipal Code: 13.32.060 - Up to 10% Reduction in residential use | Yes |
| 1 | Increase Water Waste Patrols | Boosts the effectiveness of implemented restrictions, especially those related to landscape water use | Water Field Office - Additional staff/temporary staff | Yes |
| 1 | Landscape - Restrict or prohibit runoff from landscape irrigation | Many suppliers already prohibit runoff at all times | | Yes |
| 1 | Landscape - Prohibit certain types of landscape irrigation | Boosts the effectiveness of other methods - not readily quantifiable | | Yes |
| 1 | Other - Customers must repair leaks, breaks, and malfunctions in a timely manner | Boosts the effectiveness of other methods - not readily quantifiable | | Yes |
| 1 | Other - Require automatic shut of hoses | Many suppliers already prohibit unrestricted hose use | | Yes |
| 1 | Reduce System Water Loss | Depends on extent and magnitude of current system losses, but could reduce system loss by up to 25 - 35% | | Yes |

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| | | | | |
|---|---|---|---------------------------------|-----|
| 1 | Other - Prohibit vehicle washing except at facilities using recycled or recirculating water | 100-200 gal/year/residential connection | For car washes | Yes |
| 1 | CII - Restaurants may only serve water upon request | 50 gal/day/commercial connection | | Yes |
| 1 | CII - Lodging establishment must offer opt out of linen service | 250-500 gal/day/hotel | | Yes |
| 1 | Other water feature or swimming pool restriction | N/A | Refer to SMC Section 13.32.060. | Yes |
| 2 | Other | N/A | Refer to SMC Section 13.32.060. | Yes |
| 3 | Other | N/A | Refer to SMC Section 13.32.060. | Yes |
| 4 | Other | N/A | Refer to SMC Section 13.32.060. | Yes |
| 5 | Other | N/A | Refer to SMC Section 13.32.060. | Yes |
| 6 | Other | N/A | Refer to SMC Section 13.32.060. | Yes |

NOTES: Stage 1 demand reduction actions are mandatory in conformance with SMC §13.28.030. Mandatory conservation is required from May 1 to November 1.

At all times, regardless of whether a water shortage stage has been enacted, the City has regulations in place to conserve water use. These are provided in SMC Chapter 13.28 and are summarized in Table 3.

The City may request that its customers further reduce their water demands in response to a water shortage emergency through SMC Chapter 13.32. During Stage 1, the City requires mandatory water conservation from its customers and enforces the regulations provided in SMC §13.28.030 as presented in Table 3 to achieve up to a 10 percent demand reduction. During Stage 2, the City adds additional mandatory restrictions as provided in Section 4.2 to achieve up to a 20 percent demand reduction. Further, the City will require mandatory demand reduction for various customer sectors during Stage 3 and above in accordance with SMC §13.32.060. The City is currently updating SMC Chapter 13.32 to incorporate Stage 6 for water shortage conditions greater than 50 percent.

| Table 3. Current Water Conservation Regulations^(a) |
|--|
| <i>Washing Pavement</i> |
| Prohibit hosing off sidewalks, driveways, and other hardscapes |
| <i>Exterior Washing of Autos, Boats, Buildings (SFR, MFR, CII)</i> |
| Prohibit washing automobiles or boats with hoses not equipped with a shut-off nozzle |
| Prohibit of operation of non-self-service commercial car wash unless reclaimed water is used |
| Prohibit use of water cleaning the exterior of buildings or mobile homes unless bucket/sponge or pressurized washing device equipped with quick acting positive shut off is used |
| <i>Ornamental Water Features (SFR, MFR, CII)</i> |
| Prohibit using non-recirculated water in a fountain or other decorative water feature |
| <i>Landscape Irrigation</i> |
| Prohibit watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation |
| Prohibit irrigating ornamental turf on public street medians |
| Prohibit irrigation between the hours of 11:00 am to 6:00 pm ^(b) |
| Conduct irrigation in such a manner that allows water to run off, escape, or be wasted ^(b,c) |
| <i>Fire Hydrant Supply</i> |
| Prohibit any use of potable water from fire hydrant except by regularly constituted fire protection agencies for fire suppression purposes or by the responsible water agency ^(b) |

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Table 3. Current Water Conservation Regulations^(a)

| |
|---|
| <i>Private Water Plumbing</i> |
| Prohibit water loss through leaks, breaks, or malfunctions within the water user's plumbing or distribution system |
| <i>Restaurants</i> |
| Water shall be served upon request |
| <i>Other</i> |
| Prohibit use of potable water for dust control purposes except for public health and safety purposes ^(d) |
| Unnecessary running of water or washing without reasonable purpose ^(e) |
| Draining or refilling existing swimming pools prohibited between June 1st and October 1st. |
| (a) Water Conservation Regulations per SMC §13.28.030. Currently in place at all times regardless of whether a water shortage stage has been enacted. |
| (b) Water use prohibited from May 1 st to November 1 st |
| (c) Exceptions include use of drip or mist irrigation systems, during initial 21-day establishment of new plantings, other uses which cannot reasonably comply with regulations. The other uses must have approval. |
| (d) Reclaimed, recycled, or non-potable water may be used as long as it is not wasted. |
| (e) Exceptions include public water systems or groundwater aquifer used by public water system. |

4.2 Additional Mandatory Restrictions

In addition to the above discussed demand reduction response actions, the City may implement mandatory water restrictions set forth in SMC §13.32.40. For Stages 2 and above, the following restrictions take effect:

1. Any use of potable water from any fire hydrant is prohibited, except by regularly constituted fire protection agencies for fire suppression purposes or by the responsible water agency, when alternate water sources or recycled water sources are available. In the absence of alternate water sources or reclaimed water sources, use of potable water from a hydrant may be used, provided a permit for such use is approved by the Fire Department and the responsible water agency.
2. Use of potable water for dust control purposes, except for public health or safety purposes. Reclaimed, recycled or other non-potable water may be used for such purposes so long as such water is not wasted.
3. Irrigation of exterior landscaping, turf areas, open ground, crops, trees, grass, lawn, groundcover, shrubbery, or decorative plantings between the hours of 11:00 a.m. and 6:00 p.m., except irrigation by drip or mist irrigation systems shall not be restricted as to hours.
4. Irrigation of exterior landscaping, turf areas, open ground, crops, trees, grass, lawn, groundcover, shrubbery, or decorative plantings in such a manner or extent that allows water to run off or escape from the premises or to be wasted.

These restrictions are in addition to State-mandated prohibitions.

4.3 Supply Augmentation and Other Actions

Should the COSMUD water supply portfolio be insufficient to meet the planned demands of its customers, the COSMUD may augment its water supply and take other actions as summarized in Table 4. The shortage stage and level for which each action will commence implementation is provided, along with the estimated extent that the action will reduce the shortage gap. Details regarding operational changes in response to water shortage are provided in Section 4.4.

Table 4. Supply Augmentation and Other Actions (DWR Table 8-3)

| Shortage Level (Stages) | Supply Augmentation Methods and Other Actions by Water Supplier <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool</i> | How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i> | Additional Explanation or Reference <i>(optional)</i> |
|----------------------------|---|--|---|
| 4 | Exchanges | Up to shortage gap | Potentially with neighboring agencies, such as an irrigation district |
| 4 | Transfers | Up to shortage gap | Potentially from WID |
| 5 | Exchanges | Up to shortage gap | Potentially with neighboring agencies, such as an irrigation district |
| 5 | Transfers | Up to shortage gap | Potentially from WID |
| 6 | Exchanges | Up to shortage gap | Potentially with neighboring agencies, such as an irrigation district |
| 6 | Transfers | Up to shortage gap | Potentially from WID |

4.4 Operational Changes

COSMUD may modify its operations on a short-term or long-term basis in response to any water shortage condition. COSMUD may take any one or a combination of the following actions:

1. To facilitate supply augmentation, COSMUD may operate any combination of active and standby wells in the North or South Stockton water service areas to address shortages in surface water supplies.
2. COSMUD may expedite repairs of leaks in its water distribution system. All meter leaks and emergency breaks would usually be repaired the same day they are reported. Non-emergency service line and main breaks would be repaired as soon as feasible.
3. During the duration of the water shortage condition, COSMUD may limit its regular maintenance water system flushing operations such that flushing is conducted only in areas with known water quality issues.

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4.5 Emergency Response Plan

As stated in Section 3, the City's water shortage stages outlined in Table 1 apply to both foreseeable and unforeseeable water supply shortage conditions, including catastrophic water shortage conditions.

The COSMUD *Water System Emergency Response Plan* (ERP) addresses catastrophic water shortage water conditions. Water shortage emergency response is coordinated with the County's Advisory Water Commission. The ERP outlines response procedures associated with unforeseeable incidents such as water supply contamination, earthquake, infrastructure failure, and other events. The ERP includes actions to be taken in preparation for, during, and recovery from such events.

The City's response planning for continued water service includes the use of standby generators, water purification supplies and equipment, emergency drinking water storage, and water trucks. Water storage, treatment, and pumping facilities have been constructed to meet earthquake safety standards and are inspected regularly. The City has entered into a Memorandum of Understanding (MOU) with Cal WARN for mutual aid and assistance during times of emergency.

5.0 COMMUNICATION PROTOCOLS

In the event of a water shortage, the City must inform their customers, the general public and interested parties, and local, regional, and state entities. Communication protocols for foreseeable and unforeseeable events are provided in this section. In any event, timely and effective communication must occur for appropriate response to the event. COSMUD staff are provided cell phones and City email accounts to communicate internally and externally.

5.1 Communication for Foreseeable Events

Water shortage may be foreseeable when the COSMUD conducts its AWSDA as described in Section 2. When the COSMUD determines the potential of a water shortage event, the City Council may find, determine and declare a water shortage emergency in accordance with SMC §13.32.020.

If a water shortage emergency is anticipated, COSMUD staff will coordinate interdepartmentally, with the region's water service providers, and with San Joaquin County for the possible proclamation of a local emergency.

The City will hold a duly noticed public hearing to receive a presentation of the current or predicted shortage as determined by the AWSDA. If the City Council adopts a resolution declaring a water shortage emergency and water shortage stage, and authorizing water shortage response actions, COSMUD staff will coordinate with the City's Public Information Officer (PIO) to inform customers and the general public.

The PIO and COSMUD staff will coordinate to communicate the water shortage emergency, water shortage stage, and authorized water use restrictions. The City may use bill stuffers or newsletters, social media, its website, and press releases.

If needed, COSMUD staff will communicate with the appropriate State agencies regarding the water shortage emergency.

5.2 Communication for Unforeseeable Events

Water shortage may occur during unforeseeable events such as earthquakes, fires, infrastructure failures, civil unrest, and other catastrophic events. The COSMUD ERP provides specific communication protocols and procedures to convey water shortage contingency planning actions during these events. The City may trigger any of these communication protocols at any water shortage stage, depending on the event.

In general, communications and notifications should proceed along the chain of command. Notification decisions will be made under the direction of the Incident Commander. External communications will be managed by the PIO. All COSMUD staff are provided their communication responsibilities. The Deputy Director will work with the Chief Plant Operator and Laboratory Supervisor to notify regulatory agencies. The ERP provides a list of relevant contacts to notify at the local, regional, and state level.

The PIO is the official spokesperson for COSMUD and is the only staff authorized to speak directly to public media representatives. The PIO maintains a list of contacts to disseminate information to the public. Additionally, the City maintains profiles on social media platforms including Facebook and Twitter. These profiles may be used to convey information to staff and the public, in addition to their website and email.

To maintain the security of the COSMUD water system, the ERP is maintained as a confidential document and may not be incorporated in this UWMP.

6.0 COMPLIANCE AND ENFORCEMENT

SMC Chapter 13.28 and 13.32 support the implementation of the City's water shortage contingency actions. These chapters include provisions for compliance and enforcement of its water use regulations, restrictions, and prohibitions and are available on the City's website. SMC Chapter 13.28 is highlighted on the City's [water conservation webpage](#) to notify the public of year-round regulations and water restrictions. SMC Chapter 13.32 comes into effect when a Stage 2 or above water shortage emergency is declared by City Council. Non-compliance is deemed as a violation and is classified as an infraction. Each day of continued violation is considered as a separate offense.

The COSMUD Director and duly designated representatives are authorized to enforce provisions of SMC Chapter 13.28 and make determinations with regard to the customer water allocations provided in SMC Chapter 13.32. For these purposes, they have the power and discretion of a law enforcement office.

6.1 Stages 1 Enforcement and Penalties

Enforcement and penalties for non-compliance with Stage 1 restrictions are provided in SMC §13.28.050 and §13.28.060. When the City becomes aware of a customer violating, causing, or permitting a violation of the restrictions prohibitions presented in Table 2, the City issues a notice that describes the nature of the violation and includes an order that the violation be corrected within a stated period. Upon occurrence of a second violation or failure to correct the initial violation, the City issues a second notice ordering immediate correction and imposing a surcharge of \$100 per day for each day the violation continues. The COSMUD Director may issue an order to cease and desist until appropriate remedial actions are taken. For continued violation, the COSMUD Director may order discontinuance of service.

6.2 Stages 2 and Above Enforcement and Penalties

Enforcement and penalties for non-compliance with Stages 2 and greater are provided in SMC §13.32.100. The first billing period after the effective date of the City Council's declaration of a water shortage emergency or the effective date stated in the resolution is considered as an adjustment period during which no penalties will be imposed for water usage in excess of the minimum allocation allowed under SMC §13.32.60.

Beginning with the second billing period after the effective date, any customer who exceeds the established allocation in any monthly billing cycle is charged an excess use charge in addition to all other charges. For continued violation, the customer is issued a warning. If the violation is not corrected, the City may install a flow restricting device on the customer's water service which remains in place for at least 48 hours and until the customer has paid the removal charges.

If the customer again violates water use restrictions, after removal of a flow restricting device by the City, the City may install a flow restricting device which remains in place for at least two weeks and until payment for removal by the City. Further violations, removal of or by-passing the flow restricting device may result in termination of water service.

6.3 Appeal and Exemption Process

Customers may appeal a determination, order, or directive of the Director by submitting a written appeal to the City Manager and filing written notice to the City Clerk within ten (10) days of receiving the determination, order, or directive. The written appeals should include supporting facts and reasons. The City Manager, or duly designated representative, may hold an appeal hearing, where the appellant and the Director are heard. At the conclusion of hearing the appeal, the City Manager, or duly designated representative, may affirm, reverse or modify the determination, order or directive of the Director. The City Manager's or the designee's action on the appeal is final.

Customers may appeal minimum water allocations or use classifications on the basis of hardship or incorrect calculation by submitting a written appeal to the Director and providing detailed reasons for the appeal. The Director will review appeals for reconsideration and make decisions on the appeal. If the customer disagrees with the Director's decision, the customer may submit an appeal to the City Manager as described in the preceding paragraph.

7.0 LEGAL AUTHORITIES

The City has two ordinances that support the implementation of its WSCP. In April 1988, the City adopted its Water Conservation Ordinance. The Water Conservation Ordinance has been incorporated in the SMC as Chapter 13.28 and updated over time. Further, in March 1991, the City adopted its Water Shortage Emergencies Ordinance. The Water Shortage Emergencies Ordinance was incorporated in the SMC as Chapter 13.32. SMC Chapter 13.28 was updated in September 22, 2017 to incorporate permanent water use restrictions set forth by State Executive Order B-40-17. The current SMC Chapter 13.28 Water Conservation and SMC Chapter 13.32 Water Shortage Emergencies are available at <https://qcode.us/codes/stockton/>, under Title 13. At time of preparation of this WSCP, the City is updating both SMC Chapters to incorporate updates presented herein.

Water Shortage Contingency Plan

When a water shortage is determined, the City will coordinate interdepartmentally, with the region's water service providers, and with San Joaquin County for the possible proclamation of a local emergency in accordance with under California Government Code, California Emergency Services Act (Article 2, Section 8558).

In accordance with SMC §13.32.020, the City Council is required to conduct a duly noticed public hearing for the purpose of determining whether a water shortage emergency condition exists and, if so, the degree of the emergency and what regulations and restrictions should be enforced in response to the shortage. The City shall declare a water shortage emergency in accordance with CWC Chapter 3 Division 1:

Water Code Section Division 1, Section 350

...The governing body of a distributor of a public water supply...shall declare a water shortage emergency condition to prevail within the area served by such distributor whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to the extent that there would be insufficient water for human consumption, sanitation, and fire protection.

The water shortage emergency declaration triggers communication protocols described in Section 5 and compliance and enforcement actions described in Section 6.

8.0 FINANCIAL CONSEQUENCES OF WSCP

The City maintains an adequate operational reserve to protect against a temporary water shortage. The City anticipates reduced revenue due to decreased water use by its customers and additional costs associated with implementing water use restrictions and associated compliance actions. Reduced revenue and costs associated with compliance actions are considered in the City's water rate study.

The City's water rate structure includes drought recovery charges¹ which are applied to customers' water consumption, based on the water shortage stage. The City's current water rates are available at www.stocktonca.gov. The goal of the drought recovery charges is to recover the temporary loss of revenue due to reduction of water sales during a period of water shortage and to recover costs associated with enforcing compliance with water use restrictions. The drought recovery charges are also intended to encourage water use conservation during water shortage emergencies.

9.0 MONITORING AND REPORTING

COSMUD's water system is fully metered, from its water supply sources to individual customer meters. These meters may be used as monitoring tools for compliance and reporting purposes.

COSMUD's meters at its water sources—DWTP, SEWD, and groundwater production wells—provide a systemwide overview of water supply and demands. The City may use this information to assess progress in meeting its water shortage response objectives. The information collected from these meters allows

¹ Formerly referred to as Drought Surcharges.

Water Shortage Contingency Plan

the City to determine the extent of implementation of public outreach and enforcement actions, and adjust other water shortage response actions.

At time of preparation of this WSCP, the State Water Board is preparing regulations for monthly reporting of water production and other uses, along with associated enforcement metrics. COSMUD regularly records its water meter readings, along with enforcement actions, ensuring that the City will be able to comply with upcoming reporting requirements.

10.0 WSCP REFINEMENT PROCEDURES

This WSCP is an adaptive management plan. It is subject to refinements as needed to ensure that the City's shortage response actions and mitigation strategies are effective and produce the desired results. Based on monitoring described in Section 9 and the need for compliance and enforcement actions described in Section 6, the City may adjust its response actions and may modify its WSCP. When a revised WSCP is proposed, the revised WSCP will undergo the process described in Section 12 for adoption by the City Council and distribution to San Joaquin County, its customers, and the general public.

10.1 Systematic Monitoring

The COSMUD will monitor meters at its water sources to evaluate the overall effectiveness of its response actions in meeting the declared water shortage stage. Should overall demands not meet or exceed the goals of the declared water shortage stage, the intensity of public outreach for water conservation and the extent of enforcement of water use restrictions may be increased. Conversely, should overall demands continue to be substantially less than the goals of the declared water shortage stage, the intensity of public outreach for water conservation and the extent of enforcement of water use restrictions may be decreased.

10.2 Feedback from City Staff and Customers

Feedback from City staff and the public is important in refining or incorporating new actions. The City may seek input from staff who interface with customers to gauge the effectiveness of its response actions and for response action ideas.

11.0 SPECIAL WATER FEATURE DISTINCTION

The City distinguishes special water features, such as decorative fountains and ponds, differently from pools and spas. Special water features are regulated separately. Regulations under SMC §13.28.030 prohibit the use of non-recirculated water in fountains or other decorative fountains.

12.0 PLAN ADOPTION, SUBMITTAL, AND AVAILABILITY

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

Water Shortage Contingency Plan

No later than 30 days of adoption, copies of this WSCP will be available at the City's offices. A copy will also be provided to San Joaquin County. A copy of this WSCP will also be available for public review and download on the City's website.

Stockton Municipal Code (SMC) Chapter 13.28

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Stockton Municipal Code, Charter, and Civil Service Rules

[Up](#) [Previous](#) [Next](#) [Main](#) [Collapse](#) [Search](#) [Print](#) [No Frames](#)[Municipal Code Title 13 PUBLIC SERVICES](#)**Chapter 13.28 WATER CONSERVATION**

13.28.010 Definitions.

Unless the context requires otherwise, the following definitions shall be used in the interpretation and construction of this chapter. Words used in the present tense include the future; the singular number includes the plural and the plural the singular.

“Alternate water source” means water from sloughs, canals, streams, rivers or nonpotable wells which is acquired with permission from the responsible owner or agency with jurisdiction.

“Director” means the Director of Municipal Utilities of the City.

“Person” means any individual, firm, organization, partnership, association, trust, company, business, corporation, public entity, political entity, or any agent thereof.

“Reclaimed” and “reclaimed water” refer to the process of reusing the soap/water solution and to that portion of the soap/water solution which is recaptured, processed, and reused at a non-self service commercial car wash facility.

“Recycled water” means water from the City of Stockton Regional Wastewater Control Facility supplied from designated hydrants under permit from the State Regional Water Quality Control Board.

“Waste” means any inefficient or unreasonable use of or unreasonable method of use of water.

“Water” means any water used in the City. (Prior code § 9-710)

13.28.020 Application of regulations.

The provisions of this chapter shall apply to all persons using water in the City regardless of whether any person using water shall have a contract for water service with the City. Notwithstanding other provisions of this code inconsistent with the chapter, the provisions of this chapter shall supersede and prevail until termination of this chapter, except during a declared water shortage emergency, Stage 2, 3, 4 or 5, in which event the provisions of Chapter [13.32](#) shall prevail. (Prior code § 9-711)

13.28.030 Regulations.

A. It is unlawful for any person to use, permit or allow the use of water in any of the following manners:

1. Hosing off sidewalks, driveways, and other hardscapes;
2. Washing automobiles or boats with hoses not equipped with a shut-off nozzle;
3. Using non-recirculated water in a fountain or other decorative water feature;
4. Watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation; and
5. Irrigating ornamental turf on public street medians.

B. It is unlawful during the period May 1st to November 1st of each year for any person to use, permit or allow the use of water in any of the following manners:

1. Any use of potable water from any fire hydrant is prohibited except by regularly constituted fire protection agencies for fire suppression purposes or by the responsible water agency, when alternate water sources or reclaimed water sources are available. In the absence of alternate water sources or recycled water sources, potable water from any fire hydrant may be used provided a permit for such use is approved by the Fire Department and the responsible water agency.

2. For exterior irrigation, including, but not limited to, public, private, and commercial locations, except as follows:

- a. Irrigation shall be prohibited between the hours of 11:00 a.m. to 6:00 p.m.

- b. To conduct exterior irrigation in such a manner or extent that allows water to run off or escape from the premises or to be wasted.
- c. Exceptions to the above regulations:
 - i. Drip and/or mist irrigation systems.
 - ii. During the initial 21-day period of establishment for new plantings the above regulations shall not apply.
 - iii. Other uses which cannot reasonably comply with the above regulations due to the large size, normal hours of use or type of use of the area to be irrigated may be excepted upon approval by the Director of a water conservation plan which meets the goals of reduction and conservation.
- 3. To allow the escape of water through leaks, breaks, or malfunction within the water user's plumbing or distribution system for any period of time within which such break or leak should reasonably have been discovered and corrected. It shall be presumed that a period of 24 hours after the water user discovers such break, leak, or malfunction, or receives notice from the City, any water provider or enforcement authority of such condition, whichever occurs first, is a reasonable time within which to correct such condition or to make arrangements for correction.
- 4. The operation of any non-self service commercial car wash unless the soap/water solution for such use is reclaimed. If a reclaimed water system cannot be installed, the car wash operator shall submit a plan satisfactory to the Director to modify operation of the facility to reduce its usage of water by at least 20 percent of its usage during the same month of the prior year for comparable business volume. If there is no history of prior use, the operator shall provide to the Director data comparable to such history to establish its base monthly usage.
- 5. Restaurants shall serve water to customers only upon request.
- 6. Use of water for cleaning building or mobilehome exteriors shall be prohibited except as follows:
 - a. With the use of a bucket and sponge; or
 - b. For the preparation of such exterior surfaces for the purpose of repair or repainting with the use of a pressurized washing device equipped with a quick acting positive shut off.
- 7. Use of potable water for dust control purposes except for public health or safety purposes. Reclaimed, recycled or other nonpotable water may be used for such purposes so long as such water is not wasted.
- 8. The indiscriminate running of water or washing with water not otherwise prohibited above which is wasteful and without reasonable purpose.
- 9. Exception. The above regulations shall not apply to users or uses when the source of water is other than:
 - a. A public water system as defined in California [Code of Regulations](#) Section 64555(a)(23); or
 - b. A groundwater aquifer used by a public water system.
- C. The draining and/or refilling of all existing swimming pools, whether public, private or commercial, shall be prohibited between June 1st and October 1st except for protection of public health and safety. (Ord. 2017-08-22-1403 § 2; prior code § 9-712)

13.28.035 Reserved.

13.28.040 Regulations.

During the period of November 1st through April 30th, it is unlawful for any person to use, permit to allow the use of water as set out in Section [13.28.030](#) except that no restriction as to the hours of irrigation shall be imposed. (Prior code § 9-712.1)

13.28.050 Water rates and surcharges.

A. Whenever the City becomes aware of a person violating, causing or permitting a violation of the provisions of this chapter, a written notice stating the nature of the violation shall be delivered to the person at the premises by personal service or by first class mail and by posting in a conspicuous location at said premises. A copy of the notice shall be mailed to the person who is regularly billed for use of water at said premises.

B. All notices provided for by this section may be served as an addendum to the regular water service bill. All such notices may be given to any other person known to the City who is responsible for the violation or the correction thereof.

C. The notice shall describe the nature of the violation and order that said violation be corrected, cured or abated immediately or within such specified period as the City believes is reasonable under the circumstances.

D. Upon occurrence of a second violation or failure to immediately correct, cure or abate a violation, a second notice shall be served, as provided above, ordering the immediate correction, cure or abatement of the violation and imposing a surcharge of \$100.00 per day for each day the violation continues. The surcharge may be added to the next regular billing for water service. (Prior code § 9-713)

13.28.060 Discontinuance of service.

Upon a determination by the Director that a person has consumed water in violation of any of the provisions of this chapter, the Director may issue an order to cease and desist from such violation, and further order such person to comply forthwith with such provisions or otherwise to take appropriate remedial or preventive action. If, after the issuance of a cease and desist order, such person continues to consume or use, or again consumes or uses water in violation of any such provisions, the Director may, subject to the provisions for notification and hearing hereafter set forth, discontinue water service to the premises of such person. (Prior code § 9-714)

13.28.070 Procedure for discontinuance of service.

Prior to the discontinuance of water service to any premises, the Director shall give written notice of intention to discontinue such service, and of hearing to be held by the Director upon the question of termination, not less than 10 days prior to such hearing. A person determined to be in violation of the provisions of this chapter, the owner of the premises (if not such person), and such other persons as the Director may deem appropriate, shall be heard at the hearing on the question of termination. If, upon completion of the hearing, the Director finds that no violation has occurred, the Director shall order that the service shall not be terminated. If, upon completion of the hearing, the Director determines that such violation has occurred, or is occurring, the Director may order the water service to be terminated, or may order that service be terminated within a specified period of time unless such violation or the conditions or activities causing such violations cease forthwith or within a specified period of time, or the Director may make such other order as deemed appropriate under the circumstances and in furtherance of the purposes and intent of this chapter. (Prior code § 9-714.1)

13.28.080 Appeal.

Any person aggrieved by a determination, order, or directive of the Director made pursuant to the provisions of Sections [13.28.060](#) and [13.28.070](#) may appeal such determination, order, or directive to the City Manager. Written notification of such appeal shall be filed with the City Clerk within 10 days after notification of the determination, order, or directive of the Director, and shall set forth in detail the facts and reasons supporting the appeal. Hearing on the appeal shall be held by the City Manager or the designee within 10 days from the date of filing the notice of appeal. The appellant, the Director, and such other persons as the City Manager or the City Manager's designee may deem appropriate, shall be heard at the hearing on appeal. Upon conclusion of hearing the appeal, the City Manager or the designee may affirm, reverse or modify the determination, order or directive of the Director as deemed just and equitable, and in furtherance of the provisions, purposes, and intent of this chapter. During the pendency of any such appeal, the determination, order or directive of the Director shall remain in full force and effect. The City Manager's or the designee's action on the appeal shall be final. (Prior code § 9-715)

13.28.090 Violation an infraction.

Any person violating any of the provisions of this chapter shall be deemed guilty of an infraction. Each day such violation is committed or permitted to continue shall constitute a separate offense and shall be punishable as such. Said violation shall be in addition to the surcharges and disconnection procedure established hereinabove. (Prior code § 9-716)

13.28.100 Powers and duties of the Director.

The Director of Municipal Utilities is hereby authorized to and may enforce all the provisions of this chapter. For such purposes, the Director shall have the powers and discretion of a law enforcement officer. The Director, and duly delegated representatives, pursuant to the provisions of Section 836.5 of the [Penal Code](#) of the State of California, are hereby authorized to arrest a person without a warrant whenever there exists reasonable cause to believe the person has in his or her presence violated any provision of this chapter which is an infraction. Upon making such arrest, the Director or the delegated representative shall prepare a citation and release the person arrested pursuant to Section 853.6 of the [Penal Code](#) of the State of California. The provisions of Sections 836.5 and 853.6 of the [Penal Code](#) are hereby adopted by reference as part of this section. (Prior code § 9-717)

13.28.110 Remedies cumulative.

The remedies and penalties provided for in this chapter shall be cumulative and shall be in addition to any or all other remedies available to the City. (Prior code § 9-719)

View the [mobile version](#).



Appendix K

Public Information Materials

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What teachers are saying...

- "...an excellent presentation...fun and engaging!"
- "...very appropriate for my grade level. The students loved the visual demonstrations and hands on activities."
- "Meets content standards very well...all information was extremely relevant!"
- "This lesson is fun and educational...perfect...like a field trip without the bus!"



What students are saying...

- "I learned that there is more salt water than fresh water and I am drinking the same water the dinosaurs drank!" –Maysee, Grade 2
- "You showed us how water is used over and over again. I loved the part when you made the dirty water turn clean!" –Vang, Grade 3



- "Thank you for coming to teach us about the water cycle. I like the story the best and all of it was fun." –Emma, Grade 1
- "At home I am trying my best not to waste water." –Isiah, Grade 3
- "I found out that our water comes from melting snow in the mountains, and that it's very old. I loved the water cycle game!" –Krystal, Grade 5

SAWS Water Education Programs

This brochure includes brief descriptions of the stimulating, in-classroom water education programs we offer educators in all schools in the City of Stockton metropolitan area. Each grade specific program is designed to support your classroom curriculum and provide California Content Standards based learning that will inform and educate students about the practical and scientific concepts behind society's need to conserve water.



SAWS, the Stockton Area Water Suppliers, is an association of water professionals from the California Water Service Company, the City of Stockton, Stockton East Water District, and San Joaquin County. We understand that one of the best ways to encourage the wise use of water is to educate our young citizens about the precious nature of water as a necessary resource for society's survival.

Please review this brochure and call us with any questions.

To Schedule Your Presentation...

Email or call

Kristin Coon

Water Conservation Coordinator
Stockton East Water District

kcoon@sewd.net

or

(209) 444-3126

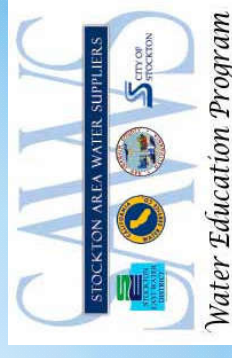
Space is limited; presentations will be booked on a first-come, first-served basis

Standards Based Learning for

Stockton Area Schools

FREE PRESENTATIONS

Sponsored by
Stockton Area Water Suppliers (SAWS)



CLASSROOM PRESENTATIONS

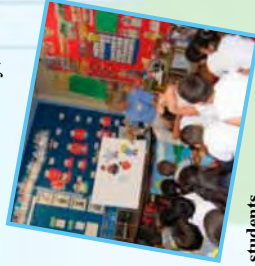
Kinder/Grade 1

“Water Cycle Story”

This presentation provides an introduction to the water cycle and water’s three states of matter. A flannel board story uses colorful pictures and scenarios to discuss how we use water in our lives and how water’s three “costumes” play an important part in the water cycle. The concepts of recycling and conservation are also discussed. Midway, we break for a “cloud stretch” and a song.

The program ends with a water themed game.

Program Duration: 70 minutes.



This program is most effective for late-year Kindergarten and Grade 1 students.

Standards: Hist/Soc Sci: K.1.1, K.4.2. Phys Sci: K.1.a, b, c, 1.1.a.b. Life Sci: 1.2.b, 1.2.e. Earth Sci: K.3.a, b, c. 1.3.b, c. Invest/Exp: K.4.a, K.4.d. 1.4.a, c, g.

Grade 5

“The Incredible Journey”

Learning is fun as students become water molecules in a fast-paced game that moves them from oceans to rivers, plants, glaciers, lakes and clouds: evaporating, condensing, transpiring, accumulating, and precipitating to demonstrate the endless process of the water cycle.

The program also includes an in-depth review of the water cycle and a water filtering demonstration. On-site water treatment plant tours are also available for Grade 5 classrooms.

Program Duration: 90+ minutes

Standards: Phys Sci: 5.1.b, 5.1.g. Life Sci: 5.2.e, 5.3.a, 5.3.b, 5.3.c, 5.3.d, 5.3.3, 5.4.b. Invest/Exp: 5.6.g



Grade 2 “H2O to Go”

The Grade 2 program focuses on water in motion. Students will trace water’s journey from the mountaintops to our faucets and learn about the push/pull forces used to move water in nature and in man-made conveyance systems. Weather permitting, the class will move outdoors for hands-on pumping and siphoning activities (water activities can also be done inside classrooms with a roomy sink area).

The program concludes with a question and answer session about water in motion.

Program Duration: 90 minutes

Standards: Phys Science: 2.1.c, d, e. Invest/Exp: 2.4.g



Middle School

“Our Watershed”

...we all live downstream

What is a watershed? How do our actions in our environment affect the quality of the water we drink? Why is stormwater management important in maintaining a safe, clean water supply? This interactive presentation defines and demonstrates the concepts of watersheds, point and non-point source pollution and stormwater. Students work together in groups using Envirosearch® Models to demonstrate how activities within a watershed can affect drinking water.

Duration: 90+ minutes

Standards: 5.3, 6.1, 6.2, 6.4, 6.5, 6.6, 6.7, 7.7



Grade 3 & 4

“Water Matters!”

This presentation takes an in-depth look at the hydrologic cycle and water’s three states of matter. Students will see a demonstration of the ratio of salt water to fresh water on earth and relate this ratio to the water cycle’s amazing ability to provide the earth with a reliable, clean, fresh supply of H₂O. A hands-on activity helps students discover and understand how liquid water’s cohesive properties relate to every day uses of water and the delicate balance of our natural ecosystems. Stockton’s water sources are discussed. A water filtering demonstration concludes the program.

Program Duration: 90 minutes

Standards: Phys Science: 3.1.e, f, g, h. Life Sci: i, 3.3.c, 4.2.b, 4.3.a, b. Invest/Exp: 4.6.e



After School/Event

“H2OLYMPICS”

How many water drops will fit on the head of a penny? Can you negotiate the water maze? Make a paper clip float?

The SAWS H2Olympics combines water science and fun to make your special event even more special! This program can be structured to serve up to six classes. Great for farm days, after school programs and other organized special events.

Requires volunteer help. For Details: kcoon@sewd.net or (209) 444-3126



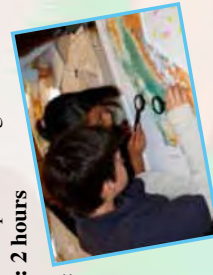
Grade 4 or 6

“California Water”

Eureka! Liquid Gold! From the gold rush to modern day farming, water affects every aspect of our lives here in California. In this program, students vie for water rights in a game designed to demonstrate how water availability affects growth and progress in our state. This knowledge is linked to the processes used to bring food to our tables and move water to arid southern regions of the state through map interpretation and hands-on activities. Requires some preteaching.

Program Duration: 2 hours

Standards: Hist/Soc Sci: 4.1.3, 4.1.4, 4.1.5, 4.3.3, 4.4.2, 4.4.7, 4.5.5, 6.2, 6.4



SAWS Water Education Program

ANNUAL REPORT

2019/2020 School Year



SAWS Stockton East Water District
California Water Service Co.
San Joaquin County
City Of Stockton

STOCKTON AREA
WATER SUPPLIERS

WATER EDUCATION PROGRAM

Report Summary



WATER EDUCATION PROGRAM

SAWS Water Education Program Annual Report Summary

School Year: 2019/2020

August 1, 2019 through July 31, 2020

This report presents an overview of the implementation of the Stockton Area Water Suppliers (SAWS) Water Education Program in the 2019/2020 school year. The report includes a summary of the year's outreach effort, a full report, the data and statistics resulting from that outreach effort, a description of the presentations offered to Stockton area educators by the SAWS Water Education Program, participant feedback, and a tentative plan for the 2020/2021 school year.

Like all educational outreach programs in California and the United States, the SAWS Water Education Program has been affected by the COVID-19 Pandemic. On March 13, 2020, all four Stockton area school districts announced restricted campus access for parents and community members due to the COVID-19 pandemic. The following week, Governor Newsom ordered all California schools closed. Our last day in the classroom was March 12, 2020; we were not able to implement the classroom visits, Zun Zun assemblies and event outreach on our calendar from March 13 through May 28, 2020. Thus, our outreach tallies are significantly lower than previous years.

In the 2019/2020 school year, the SAWS Water Education Program continued to serve elementary/middle school classrooms in the Stockton service area. As part of a comprehensive outreach effort, the SAWS Water Education Program also participated in youth oriented special events that occurred before the shutdown, including Black Family Day and three San Joaquin County AgVenture events.

As in previous years, the SAWS Water Education Program offered six grade-level specific in-class presentations and the Zun Zun school-wide assembly program. In the 2019/2020 school year, the SAWS Water Education Program served 16,111 participants through a variety of in-class, event and after school programs, and 658 elementary school students through the Zun Zun "Water Beat" Assembly Program, reaching a total of 16,769 Stockton area students and citizens.

2019/2020 Program Highlights:

The SAWS Water Education Program experienced a shortened year due to the COVID-19 school closures in mid-March 2020.

- The SAWS Water Education Program visited 45 Stockton area schools/event venues, presenting in 246 classrooms for 16,115 students and citizens.
- The Zun Zun Assembly Program performed for 658 students in one Stockton area school.
- The SAWS Water Education Program participated in local, youth-oriented special events that occurred before the state-wide shutdown, including:
 - San Joaquin County AgVenture Events (Three venues: South County, Stockton & Lodi)
 - Lincoln High School’s “Window on Your Future” career path development event
- The coordinator attended a variety of on-line meetings and seminars, including DWR’s Water Education Committee meetings via Zoom, and participation in San Joaquin County Office of Education’s formation of the Community Partners for Environmental Literacy (CPEL), a collaboration of local educators working toward effective environmental outreach, both physical and virtual.

For a complete breakdown of the 2019/2020 SAWS Water Education Program outreach statistics, please see page 20 under the “Program Stats” tab in this report.

The Coming School Year

While the SAWS Water Education Program is scheduled and fully booked for classroom presentations starting in September 2020, it appears that school districts in our region will utilize distance learning or a combination of physical and distance learning for at least the first quarter/semester of the 2020/2021 school year. Traditional classroom learning may not resume until there is a vaccine or treatment for COVID-19. In addition, it is likely that volunteer/community programs that visit the classroom will initially be restricted, even when students return to campus. Thus, the coordinator is in the process of developing virtual learning tools that can be used by teachers until normal classroom procedures return.

THE 2020/2021 SAWS WATER EDUCATION PLAN

The SAWS Water Education Program is well known and has developed a devoted following among teachers in nearly every school in the Stockton service area. Educators often design lesson plans around our presentation curriculum. SAWS also provides classroom supplies and educational materials that teachers value. Keeping these goals in mind, the coordinator is currently working with the Department of Water Resources and SJCOE/CPEL to develop virtual outreach programs that can be integrated into

distance learning curriculum. Using educational tools that are popular with teachers and used in distance learning (Padlet, EdPuzzle, Flipgrid, etc.), the Coordinator is developing virtual presentations that include videos, digital links and narrated water education vignettes and clips that can be inserted into or used in conjunction with teachers' lesson plans. Teachers integrating SAWS virtual water education presentations into their curriculum will be supplied with related workbooks and worksheets to follow up on lessons, as well as pencils, crayons and other items they can use in the classroom or, if possible, include in distance learning home packets.

When Stockton area schools return to traditional learning, the SAWS Water Education Program will revert to our former methods of outreach, reinforced and enhanced by the virtual tools we are developing for distance learning.

Full Report



WATER EDUCATION PROGRAM

2019/2020 SAWS WATER EDUCATION PROGRAM REPORT

What We Do and How We Do It

Effectively Promoting Water Awareness and Conservation

It is well known that measuring the success of water conservation/education outreach is difficult. How much did the target audience learn? How many will actually embrace the message and act on it? Who will share the information with family and friends? Will those who participate make water conservation a life-long habit? Quantifying the results of these queries is nearly impossible, and under normal circumstances, water providers can only hope these efforts are making a difference. But in recent years California's response to a prolonged drought produced evidence that water conservation education raises awareness and promotes wise water use, resulting in substantial, quantifiable water savings throughout the state. Water conservation education in the primary grades certainly plays a major role in these results, as it teaches conservation concepts as students are forming lifelong habits.

The SAWS Water Education Program strives to make students aware that wise water use must be practiced daily, helping them understand that a banner rainfall year, or even two, will not remedy California's water dilemma. Through our outreach, we hope to make our future citizens and leaders understand that, due to our dry climate, storage issues and population growth, water will continue to be a very important issue in California, and we must all be prepared to make water conservation a way of life.

During the extreme drought years, state outreach and media messaging put an emphasis on water conservation in California, and that emphasis provided rare, tangible evidence of the effectiveness of outreach programs like ours. Stockton was one of the most successful cities in the state when it came to implementing conservation measures during the drought, reducing water use by nearly 30 percent. Since 2005, the Stockton Area Water Suppliers alliance has funded multi-faceted outreach in our communities, reaching thousands of students and citizens every year. Since its inception the program has reached over 350,000 people through classroom presentations and public, youth-oriented events. Many of the students we have worked with over the years are now adult citizens of Stockton with a heightened awareness of the importance of our water resources because they participated in our programs when they were forming life-long habits in their youth. These are the people who buckled down and conserved water during the drought.

Is Stockton’s impressive success in meeting and exceeding water conservation goals during the drought evidence of the success the SAWS agencies have had informing the public and changing their water use habits? It’s certainly possible! And it seems like a logical way to measure success.

We have found that the students and teachers we visit are still very drought aware. Even primary grade students can define the meaning of the word and the source of the problem. While media messaging may be responsible for the heightened water awareness in our communities, our presentations take students to the next level, reinforcing the conservation message and providing insight into the reasons behind it. Our programs address the learning standards that relate to water for every grade level: the water cycle, weather, ecosystems, water’s three states of matter, the scientific properties of water, current and historic water use in California, water conveyance and distribution systems, and conservation concepts. We enhance learning with a variety of hands-on activities that make the lessons fun and memorable.

The SAWS In-Class Presentation Program is in High Demand

The SAWS in-class presentations continue to be in high demand in Stockton area schools. Invitations to book presentations for the 2019/2020 school year were sent to teachers and administrators via email in early May 2019. The presentation calendar was full and a waiting list was established before the end of the school year.

The SAWS Water Education Program has developed a devoted following among Stockton teachers. Those familiar with the program often design their lesson plans with the SAWS Water Education Program in mind; the colorful visuals and hand-on activities featured in our presentations can bring lessons to life for students. Often, one teacher takes the lead to schedule multiple presentations for the entire grade level. Many teachers coordinate our grade-specific presentations with established curriculum and Next Generation Science Standards (NGSS), inviting the program to their classrooms in conjunction with units specifically related to water. Some schools even plan field trips that coordinate with our programs; St. Luke, Tully Knoles Elementary, John McCandless STEM, and several other schools coordinate our “California Water” presentation with fourth grade field trips to Columbia State Park. Fifth grade teachers are encouraged to book a water treatment plant tour/field trip in conjunction with our Grade 5 “Water Cycle: The Incredible Journey” presentation.

In-Class Presentations Meet Grade-Specific Standards

Every presentation offered by the SAWS Water Education Program is designed to meet standards specific to certain grade levels. Teachers know that our presentations can address multiple content standards/NGSS in 60-90 minutes with little or no teacher prep; we provide an excellent introduction or follow up to standard curriculum involving water for every elementary and middle school grade level.

Kindergarten and Grade 1 teachers can use our popular “Water Cycle Story” presentation to reinforce lessons about weather, states of matter, and forming and testing a hypothesis.

Grade 2 teachers often coordinate their lesson plans with our “H2O to Go!” presentation to reinforce standards related to gravity, motion and machines as students track water’s journey from source to tap using a variety of fun and exciting hands-on pumping activities.

Teachers of Grades 3, 4, 5 and 6 can use the “Water Matters” and “Water Cycle: The Incredible Journey” programs to target physical and life science content standards. The two presentations are similar but have been adapted for content/NGSS specific to each grade



The “H2O to Go!” presentation reinforces second grade standards related to gravity, motion and machines through fun, hands-on activities



Mrs. Kelly explains how water is conveyed from the water treatment plant to water storage tanks and finally to our homes

level. Both programs focus on the water cycle and water treatment and distribution, addressing a variety of science standards through fascinating facts and figures and a demonstration of the ratio of fresh to salt water on earth. During the “Water Matters” program, students perform a hands-on “scientific experiment” that demonstrates the properties of surface tension and cohesion, as well as concepts related to food chains and webs and environmental issues in our communities, standards specific to Grades 3 and 4. The “Incredible Journey”

program addresses similar science standards for grades 5 and 6; after a refresher on the water cycle, students participate in an active, social game from Project WET, embarking on the “Incredible Journey” of a water molecule in the water cycle, evaporating, condensing and precipitating around the room as they make a beaded bracelet, with each bead representing a component and process of the water cycle. Both “Water Matters” and “Incredible Journey” also include a comprehensive “Source to Tap” diagram depicting how water travels from the natural water cycle to the built water cycle to their faucets at home. A scale model sand and gravel water filter demonstration gives students a glimpse of the processes involved in water treatment and distribution and provides information about local water sources and the agencies that sponsor the SAWS Water Education Program. Drought, conservation and water awareness is also discussed throughout the program.



Students become water molecules moving through the water cycle in the “Incredible Journey” hands-on activity



The “California Water” presentation, which covers the history, use and distribution of water in the State of California, is responsive to both fourth and sixth grade content standards and features a variety of hands-on activities, including map interpretation and a role-playing game designed to introduce students to the concepts of water rights and legislation relating to our natural resources. Students learn how water is distributed throughout the state via the State Water Project and work collaboratively to find water bodies, cities and landmarks on topographical maps.

Every student in every classroom we visit receives a pre-sharpened water-saver pencil and an age-appropriate workbook with information and activities pertaining to water conservation and awareness. As a thank you for inviting us to present, participating

teachers receive a variety of gifts, that may include tote bags, magnetic clips, seed packets, water activity guides, sponges, pocket hand sanitizers, white board markers, crayon packs and other items.

The SAWS Water Education Program only distributes promotional items that are practical and useful in the classroom.

There is evidence that as Stockton's educational resources have diminished, our water education presentations have steadily gained favor. Teachers find value in our ability to connect content standards/NGSS to water resources, the environment, conservation and, recently, current events, such as drought and water legislation in California. The combination of education and entertainment we provide makes learning exciting and fun for students. We like to remind teachers that, despite budget cuts, students can still experience the benefit of community learning because SAWS sponsors in-class programs that "bring the field trip to the classroom."



Our message is reinforced through the use of colorful visuals, songs, physical activity and audience participation

Water Treatment Plant Tours

When the SAWS Water Education Program visits middle/ high school and college classrooms (Grade 5 and up), we encourage teachers to schedule a visit to the Dr. Joe Waidhofer Drinking Water Treatment Plant for a facility tour. When elementary and middle-school classes visit, we ask that the groups include at least one parent/adult chaperon for every five students. While the main purpose for this request is crowd control, we have found that parents touring the plant often learn more



Plant Supervisor Jim Wunderlich explains the water treatment process to fifth grade students during a tour of the Dr. Joe Waidhofer Drinking Water Treatment Plant

than their children do, and invariably leave with a greater appreciation for their community's water resources. College classes and community groups are fascinated by and impressed with our facilities and the treatment process; most citizens never take the time to consider the source and systems that provide them with drinking water. While school districts often lack funding for field trip transportation, some public and private schools are able to visit by using adult/parent chauffeurs and chaperons. Facility tours are valuable in raising public awareness and can provide an enlightening experience for students and community members, as well as those looking for career path possibilities.

After School Program

The "H2Olympics" program is offered to any school with a Stockton address and can serve as an after-school program, a booth at school festivals and events, or as a hands-on activity presentation to serve an entire grade level. The program features a series of fun, hands-on water activities or "experiments" that demonstrate scientific properties of water, including cohesion, adhesion and surface tension: *How many water drops can you fit on the head of a penny? Can you make a paperclip float? Can you keep a water drop intact while guiding it through a laminated maze?*

The format of the H2Olympics program allows students to have fun while learning in a relaxed, non-classroom atmosphere. As with other SAWS Water Education Programs, we have incorporated a drought/conservation discussion into the "H2Olympics" program format, and, depending on the venue, sometimes include a prize wheel or "water saver" button-making activity.



Mrs. Kirchhof explains surface tension to fourth-grade students at Tully Knoles Elementary during a hands-on activity included in the "SAWS H2Olympics" after school presentation.

Third grade students and their teacher learn about the cohesive properties of water during an "H2Olympics" presentation at the Great Valley Elementary School Farm Day Event



Benefits of the SAWS H2Olympics Programs Include:

- ◆ Hands-on activities educate and entertain
- ◆ Format holds students' attention because it provides an alternative to classroom learning structure
- ◆ Students are likely to take message home
- ◆ Parents often show up at after school programs and may even participate
- ◆ Broad outreach to multiple grade levels (K-8): maximum contacts in minimum amount of time
- ◆ Use of upper elementary and middle school helpers allows older students to work with/teach younger students: excellent learning environment for all
- ◆ Provides teachers, facilitators and activities coordinators with free, appropriate educational activities

AgVenture

Every third grader in San Joaquin County is eligible to participate in this dynamic program sponsored by San Joaquin Farm Bureau and Select San Joaquin Foundation. AgVenture participants enjoy a day of fun while learning about the vast diversity of agriculture in San Joaquin County. This event exposes students to important concepts during their “day



on the farm,” including nutritional values, agronomics, marketing, farm and crop production, the value of

locally grown products and the role that producers, vendors and the purveyors of our natural resources play in bringing these commodities to the community.

AgVenture's unique format offers a meaningful and memorable experience for students and a special opportunity for the agricultural community to reach out to some of our most impressionable citizens.

SAWS participation in these events allows us to promote our in-class, after school and assembly

As part of the SAWS Water Education Program activities at AgVenture, students make a personalized “I’m a Water Saver!” buttons

programs while sharing our message of water awareness and conservation with thousands of third graders and their teachers. Each of the three San Joaquin County AgVenture events hosts approximately 3,500 third graders.

Since 2010, the Stockton Area Water Suppliers alliance, through SEWD, has donated \$1,000 annually to AgVenture to help sustain this valuable program.

Zun Zun “Water Beat” Assemblies

Stephen Snyder and Gwynne Snyder Cropsey are “Zun Zun,” a performing arts troupe that celebrates the environment through water-themed, interactive musical assemblies.



Zun Zun

ZunZun's “Water Beat” assembly highlights the connection of the community to its watershed, focusing on water conservation and resource protection. In this 45-minute program, Zun Zun performs a number of skits using musical instruments, song and dance, audience participation and humor for a truly memorable show. Topics covered include drought, water conservation, watershed protection, water reclamation, and water

pollution. Students and teachers are encouraged to participate, playing unique “water instruments” from around the world, joining in the Sprinkler, Swimmer, and Washing Machine dances and singing the “Save Some Water” song. Audience members are invited on stage to participate in hilarious activities like the “Toilet Game Show,” where students learn that fixing a leaking toilet may be the single greatest way to save water at home. Students do the Drought Limbo and participate in a crazy race that explains the purpose of storm drains and the potential threat of storm water pollution. Participants leave the assembly singing, dancing and chatting about the many facets of water covered in the performance.

In a normal year, the SAWS Water Education Program sponsors up to two Zun Zun assemblies in each of five to seven Stockton area elementary schools.

The SAWS “Conservation Cottage” Exhibit at the Children’s Museum of Stockton

The Children’s Museum of Stockton is currently operating under the management of its Board of Directors. The facility has expanded operating hours and added new features and exhibits, attracting more visitors than ever. The Coordinator works with museum personnel on a continuing basis to maintain and improve the exhibit.

SAWS Water Education Program and the Community

The SAWS Water Education Program participates in and supplies hand-outs and materials for numerous community gatherings and other special activities and events in Stockton. The following is a list of some of the community events the SAWS Water Education Program staff participated in during the 2016/2017 school year:



The “Waterburger” at the Children’s Museum

- ◆ **San Joaquin County AgVentures (South County: November 2019, Stockton: January 2020, Lodi: February 2020)**

The SAWS Water Education Program staffed a booth featuring a hands-on activity and prize wheel at each of the three AgVenture events in the 2019/2020 school year. Our participation in AgVenture allows us to promote SAWS sponsored in-class, after school and assembly programs while sharing our message of water awareness and conservation with thousands of third grade students and their teachers. Each AgVenture event hosts approximately 3,500 third graders. Besides staffing a booth at each event, SAWS/SEWD supports AgVenture with a \$1,000 annual donation.

- ◆ **Lincoln USD “Window on Your Future” (February 2020):** The Coordinator participated in mock job interviews designed to prepare Lincoln High School students for entry into the job market. This event presents an opportunity for staff to share career path outreach with potential job seekers.
- ◆ **Manteca Unified School District’s Farm Days:** In a normal year, SAWS sponsors H2Olympics booths at these MUSD Farm Day events. These events were cancelled in 2020 due to COVID-19.
- ◆ **Stockton’s Earth Day Festival (April 2019):** In a normal year, SAWS is a principle sponsor of this popular annual festival at Victory Park in Stockton. Due to COVID-19, the 2020 Stockton Earth Day Festival was cancelled.
- ◆ **Water Treatment Plant Tours:** In a normal year, the SAWS Water Education Program and SEWD staff will host tours of the Dr. Joe Waidhofer Drinking Water Treatment Plant for Grade 5 and above.

- ◆ **Community Based Programs:** Upon request, SAWS supplies water conservation materials for Special Day and science classrooms at local middle and high schools as well as for programs for developmentally disabled adults, regional pre-school programs, and other community programs requesting materials and resources.
- ◆ **DWR Water Education Committee:** The Coordinator attended virtual meetings of the DWR Water Education Committee in the spring of 2020, joining water educators from all over California to share resources and ideas for water conservation education and outreach. The focus this year was on virtual outreach to coordinate with distance learning.
- ◆ **CPEL:** The Coordinator participated in the San Joaquin County Office of Education's (SJCOE) formation of the Community Partners for Environmental Literacy (CPEL), a collaboration of local educators working toward effective environmental outreach, both physical and virtual. CPEL/SJCOE has sponsored multiple virtual seminars during the summer break to teach environmental educators to use distance learning teaching tools, including Padlet, EdPuzzle and Flipgrid.

Program Administration

Kristin Coon (Kristin Coon Consulting) is responsible for administration of the SAWS Water Education Program. This includes hiring and supervision of employees, payroll, payroll taxes, worker's compensation and liability insurance, subcontractor negotiations/compensation and all other aspects of program operations. The approved program budget for 2020/2021 went into effect on April 1, 2020, and the contract between SEWD and Kristin Coon Consulting has been submitted for renewal effective August 1, 2020.

Staffing

In the 2019/2020 school year, under the supervision of Kristin Coon Consulting, the SAWS Water Education Program continued to serve the SAWS alliance, providing comprehensive water education outreach for Stockton area schools and citizens. Mrs. Kelly and Mrs. Kirchhof continued as the program's classroom instructors, with Mrs. Coon managing day to day business, scheduling, organizing, attending events, staffing festival booths, and providing classroom instruction and backup for the instructors. When the statewide shutdown of schools in mid-March 2020 occurred, all scheduled presentations were cancelled. Kristin Coon Consulting continued to pay staff for all classroom visits scheduled through May 26, 2020. Mrs. Kelly and Mrs. Kirchhof are currently on summer break.

Looking Ahead: The Coming School Year

While the SAWS Water Education Program is scheduled and fully booked through the 2020/2021 school year for classroom presentations, it appears that school districts in our region will utilize distance learning or a combination of physical and distance learning for at least the first quarter/semester. At this writing, the school districts have not announced a plan to resume traditional classroom instruction. In addition, volunteer/community programs that visit the classroom may initially be restricted when students return to campus. Thus, the coordinator is in the process of developing virtual learning tools that can be used by teachers until normal classroom procedures return.

THE 2020/2021 SAWS WATER EDUCATION PLAN

The SAWS Water Education Program is well known and has developed a devoted following among teachers in nearly every school in the Stockton service area. Educators often design lesson plans around our presentation curriculum. SAWS also provides classroom supplies and educational materials that teachers value. Keeping these goals in mind, the coordinator is currently working with the Department of Water Resources and SJCOE/CPEL to develop virtual outreach programs that can be integrated into distance learning curriculum. Using educational tools that are popular with teachers and used in distance learning (Padlet, EdPuzzle, Flipgrid, etc.), the Coordinator is developing virtual presentations that include videos, digital links and narrated water education vignettes and clips that can be inserted into or used in conjunction with teachers' lesson plans. Teachers integrating SAWS virtual water education presentations into their curriculum will be supplied with related workbooks and worksheets to follow up on lessons, as well as pencils, crayons and other items they can use in the classroom or include in distance learning home packets.

For 2020/2021, Mrs. Kelly and Mrs. Kirchhof have committed to another school year, sharing presentation duties equally. However, this arrangement may be affected by the COVID-19 school closures.

Mrs. Coon will continue to manage the Water Education Program, including virtual learning program development and implementation, payroll, finances, scheduling and working with SEWD, the Urban Contractors, schools and other water agencies to disseminate effective water education to Stockton area schools and communities. When our schools return to traditional classroom learning, the SAWS Water Education Program will return to the classroom.

Conclusion

As we embark upon our 16th year serving the Stockton area, the SAWS Water Education Program staff is proud to say that our outreach programs are well-known and respected in the community. Our presentations reach significant numbers of students and community members with a variety of programs, and we participate in many high-profile youth oriented local events.

In the shortened 2019/2020 school year, the SAWS Water Education Program's in-class, special event, and after school presentations reached over 16,000 students and members of the public, and, on behalf of SAWS, the Zun Zun "Water Beat" assembly program reached 658 more. The feedback from teachers and administrators is testament to the fact that we have excellent presenters who are adept at sharing knowledge of and enthusiasm for our water resources; we are invited back to schools and events year after year because the programs we offer are a valuable resource for Stockton area schools and the community. At this writing, the program is already fully booked through June 1, 2021.

The SAWS Water Education Program is endorsed and approved by the Stockton, Lincoln, Lodi and Manteca school districts as well as a variety of charter and private schools in the Stockton metropolitan area. The program is also sanctioned by the San Joaquin County Office of Education. Our success is evidenced by the numbers: teachers participate enthusiastically year after year and demand for presentations exceeds availability. The most effective tool for program sustainability remains teacher-to-teacher recommendations; we continue to visit new teachers and schools each year, and our loyal followers recommend us to their colleagues and take us along when they move to new schools. Teachers often coordinate our presentations with their lesson plans and many use our outreach programs to enhance field trip experiences. This promotes a comprehensive learning approach, which is a major component of the overall plan: when we make multiple contacts, seeing students year after year, we are building a broad knowledge base that will make water conservation and awareness second nature for those residing in our communities, ultimately helping us achieve our goal of promoting effective, community-wide water conservation and awareness in Stockton. Evaluations from both teachers and students are always enthusiastic and positive (see Feedback section), and support for the program remains strong because it reinforces grade specific content/common core standards, coordinates seamlessly with curriculum, and provides a hands-on, memorable learning experience for students.

Teacher feedback and student comments and illustrations are provided in the Feedback section of this report.

Feedback

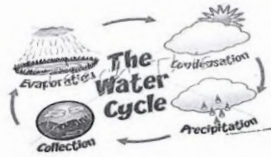
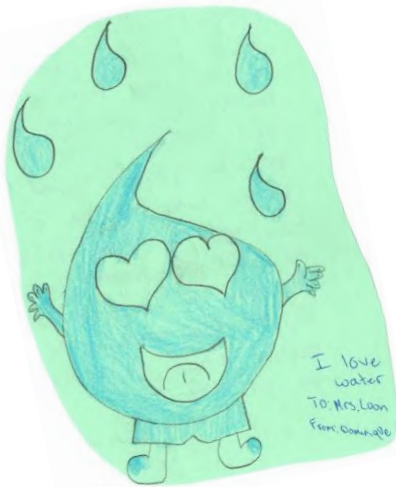


WATER EDUCATION PROGRAM

Stockton Teachers Love Our Presentations!

- *The presenter did a wonderful job introducing the objectives of SAWS. Great materials and hands-on activities kept students engaged. I learned a great deal along with my students!* Grade 4 Teacher, Oakwood Elementary
- *Great visuals...scheduling and instructors are always prepared and accommodating. If something is perfect, it is this program and the people who run it!* Grade 2 Teacher, Tully Knoles Elementary
- *Content is grade level appropriate; students are easily able to understand concepts as they relate to their real-world experiences. Love the Interactive songs, match game, activity books and toothbrushes!* Grade 1 Teacher, Brookside Elementary
- *The excellent visuals enhanced the presentation – my students understood the importance of keeping water clean.* Grade 3 Teacher, El Dorado Elementary
- *Every year we see something new in this presentation – posters, activities – that helps students understand the objectives and content. It is an outstanding program with great visuals, follow up materials and hands-on activities. I love it!* Grade 2 Teacher, Podesta Ranch Elementary
- *This presentation worked well with the weather unit we just finished. The materials and curriculum were perfect for my students, who were excited to participate and interact!* Kinder Teacher, Bush Elementary
- *The program is packed with information that is engaging for students. The presenter has a kind and calm demeanor, a great sense of humor – she is very organized and flexible.* Grade 3 Teacher, Manlio Silva Elementary
- *Students learn so much valuable information in a short amount of time! I can launch into deeper science concepts from there, and it makes science so relevant with real life examples.* Grade 1 Teacher, August Elementary
- *I love the real props and large visuals. The program focuses on local resources and utilizes Stockton landmarks for students' connection.* Grade 2 Teacher, Wagner-Holt Elementary
- *Excellent reinforcement of Grade 5 standards. I noticed updates in curriculum and visuals, and I appreciate that the presentation is constantly being improved.* Grade 5 Teacher, John Muir Elementary
- *Objectives and content were very clear – the presenter hit the first-grade standards and all materials were useful, fun and engaging for my students – they even wanted to sing the songs the next day!* Grade 1 Teacher, Mable Barron Elementary
- *In Kindergarten, we do have science content standards about water and its cycle – this awesome presentation met and exceeded those standards.* Kindergarten Teacher, Rio Calaveras Elementary
- *The water cycle, where does water come from, how does water get to my house – all these questions were answered with lots of movement, song, and hands-on activities. Thanks for the goodie bag, and a fun day!* Grade 2 Teacher, Wagner-Holt Elementary
- *LOVE, LOVE, LOVE the materials, hands-on activities, engaging songs and games! Solid, liquid and gas are in our standards and covered in this presentation.* Grade 1 Teacher, Julia Morgan Elementary

- *The water cycle was fully explained – the visuals are so helpful for understanding the concepts. I love everything about this program – we are so fortunate to have the SAWS Water Education Program in our classroom. Wish you could come twice a year!* Grade 3 Teacher, Manlio Silva Elementary



9/17/18

Dear Mrs. Kirchhof,

Thank you so much for another excellent presentation of the water cycle. Every year, it gets better and better. Your visuals and engaging style allowed my first graders to understand and retain very difficult concepts. We speak about evaporation and water vapor to this day!

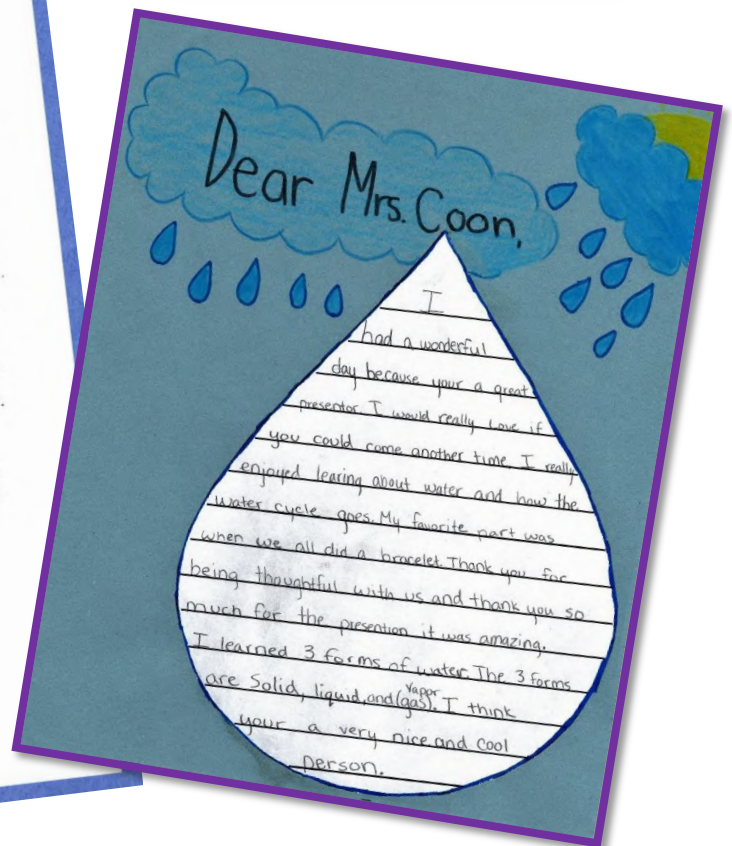
I appreciate your organization and efficiency also. You came right in, set up in the midst of our testing, were so flexible, and respectful of my time. Thank you!

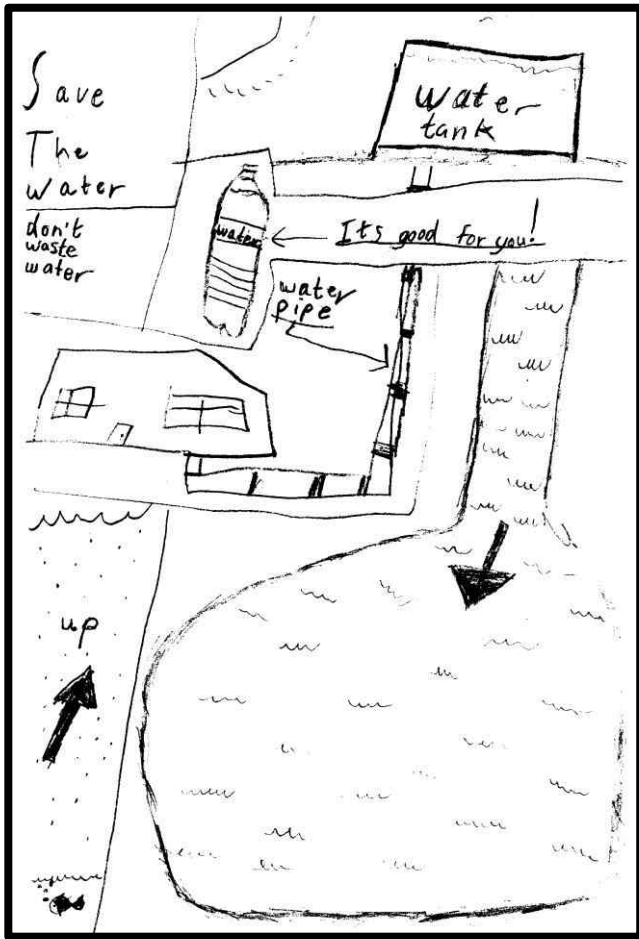
Finally, my students loved the coloring books, crayons, and work mats. Many of them completed the work mats at home and returned them to school the next Monday.

I look forward to seeing you next year! I hope you'll return.

Respectfully,

Tasha Borrego
August School
1st Grade





January 10, 2019
Dear Mrs. Kirchhof,

Thank you for the wonderful
vist. I learned a lot when you
were here. We all enjoyed the science
experiments. I told evryone in my
fairmly about it. Sincerdy, xAmelia Anicas
I loved the song!

Save Water



Dear Mrs. Kirchhof,

Thank you for
the wonderful
water presentation

I learned about the
water cycle big words
like condensation,
evaporation, precipitation
and cohesion. I enjoyed
the science experiments.



Earth's water
99% salt water
1% fresh water

Sincerely,
Abdul



← fresh from
water



Dear Mrs. Kelly,

Thank you let us use your materials.
It was so fun playing with them. I was
I learned that water has a cycle. I got
to know that we live by the Pacific
Ocean. My favorite part was the boob.

Your friendly

Donovan



Report Stats



WATER EDUCATION PROGRAM

SAWS Water Education Program
Students Participating: All Outreach Programs, All Providers
Comparison by School Year (SY)

| In-Class/Assembly | School Year / # of Students | | | | | | | | | | | | | | |
|--------------------|-----------------------------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | SY 05/06 | SY 06/07 | SY 07/08* | SY 08/09* | SY 09/10* | SY 10/11* | SY 11/12* | SY 12/13* | SY 13/14* | SY 14/15* | SY 15/16* | SY 16/17* | SY 17/18* | SY 18/19* | SY 19/20* |
| SAWS Water Ed Prog | 8044 | 12357 | 15344 | 18293 | 18838 | 18915 | 21345 | 19748 | 26320 | 23538 | 24350 | 18670 | 22438 | 23980 | 16111 |
| Assembly Program | 3002 | 11452 | 9925 | 13989 | 4459 | 4660 | 6085 | 4731 | 5934 | 4730 | 5736 | 0 | 2725 | 2151 | 658 |
| Totals: | 11046 | 23809 | 25269 | 32282 | 23297 | 23575 | 27430 | 24479 | 32254 | 28268 | 30086 | 18670 | 25163 | 26131 | 16769 |

* See notes on Assembly Program below

SY 07/08: 46 GWM assemblies performed in the 2007/2008 school year covered under the 2007/2008 agreement with SYRCL. One presenter (KC)

SY 08/09: 54 GWM assemblies performed in the 2008/2009 school year covered under the 2007/2008 agreement with SYRCL. Two Presenters (KC & SW)

SY 09/10 & 10/11: 15 Zun Zun assemblies performed in 09/10 and 10/11 school years covered under agreement with Zun Zun. Three presenters (KC, SW & CT)

SY 11/12: 18 Zun Zun assemblies performed in 11/12 covered under agreement with Zun Zun. Three presenters (KC, SW & MQ)

SY 12/13: 14 Zun Zun assemblies performed in 12/13 covered under agreement with Zun Zun. Two presenters (KC & MQ)

SY 13/14: 15 Zun Zun assemblies performed in 13/14 covered under agreement with Zun Zun. Three presenters (KC, MQ & SK)

SY 14/15: 14 Zun Zun assemblies performed in 14/15 covered under agreement with Zun Zun. Three presenters (KC, MQ & SK)

SY 15/16: 15 Zun Zun assemblies performed in 15/16 covered under agreement with Zun Zun. Three presenters (KC, MQ & SK)

SY 16/17: Zun Zun assembly program was not funded by SAWS. Three presenters through 12/16 (KC, MQ, SK), two presenters Jan-July 2017 (KC, SK)

SY 17/18: Zun Zun assembly program funding partially restored by SAWS. 9 Zun Zun assemblies performed in 17/18 covered. Three presenters (KC, SK & KK)

SY 18/19: 6 Zun Zun assemblies performed in 18/19. Three presenters (KC, SK, KK)

SY 19/20: 1 Zun Zun assembly performed in 19/20. Three presenters (KC, SK, KK), schools closed mid-March 2020 due to COVID19

SAWS Water Education Program Presentation/Event Breakdown
School Year: 2019/2020

By Presentation Type

| Presentation Type | # of Presentations | # of Students or Attendees | % |
|------------------------------|--------------------|----------------------------|-------------|
| Classroom Presentations | 241 | 8300 | 52% |
| After School Presentations | 0 | 0 | 0% |
| Water Treatment Plant Tours | 0 | 0 | 0% |
| Career Workshops | 1 | 15 | 0% |
| Children's Festivals | 4 | 7800 | 48% |
| Festival Booths | 0 | 0 | 0% |
| Water Conservation Workshops | 0 | 0 | 0% |
| Other | 0 | 0 | 0% |
| Totals | 246 | 16115 | 100% |

By Grade

| Grade | Clsrms | Students | % |
|---------------|------------|--------------|-------------|
| K | 26 | 850 | 5% |
| Gr 1 | 67 | 2270 | 14% |
| Gr 2 | 34 | 1190 | 7% |
| Gr 3 | 65 | 2275 | 14% |
| Gr 4 | 11 | 385 | 2% |
| Gr 5 | 38 | 1330 | 8% |
| Middle School | 0 | 0 | 0% |
| Aftersch | 0 | 0 | 0% |
| Event/Other** | 5 | 7815 | 48% |
| | 246 | 16115 | 100% |

By Water Provider

| Provider | Students | % |
|--------------------------|--------------|-------------|
| Cal Water | 3835 | 24% |
| City of Stockton | 3710 | 23% |
| Unincorporated/SJ County | 770 | 5% |
| All ** | 7800 | 48% |
| | 16115 | 100% |

By Presenter

| Presenter | Venues/Classrooms | Students/Citizens | % |
|----------------|-------------------|-------------------|-------------|
| Kristin Coon | 5 | 7815 | 48% |
| Suzi Kelly | 116 | 4025 | 25% |
| Kathy Kirchhof | 125 | 4275 | 27% |
| | 246 | 16115 | 100% |

By School District

| District | Students | % |
|----------------|--------------|-------------|
| Stockton USD | 3425 | 21% |
| Lodi USD | 1875 | 12% |
| Lincoln USD | 1425 | 9% |
| Manteca USD | 1075 | 7% |
| Aspire/Charter | 515 | 3% |
| Private | 0 | 0% |
| All/Other** | 7800 | 48% |
| | 16115 | 100% |

| | |
|-----------------------------------|-----------|
| Total Schools/Venues 19/20 | 45 |
|-----------------------------------|-----------|

** Students or children reached through city or county wide events: unable to determine district, provider, or grade

Appendix L

Stockton Municipal Code (SMC) Section 16.56.040

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[Municipal Code Title 16 DEVELOPMENT CODE](#)[Division 3. Site Planning and General Development Regulations](#)[Chapter 16.56 LANDSCAPING STANDARDS](#)

16.56.040 Landscape standards.

Landscaping shall be designed, installed, and maintained as follows:

- A. **General Design Standards.** The following features shall be incorporated into the design of landscaped areas.
1. Landscaping shall be planned as an integral part of the overall project design and not simply located in excess space after parking areas and structures have been planned.
 2. Landscaped areas shall be provided with an automatic irrigation system(s).
 3. Landscaping may include lawn, groundcover, trees, shrubs, and other live plant materials. Landscaping may also include small amounts of accessory decorative outdoor landscape elements (e.g., ponds, fountains, sculpture, and paved or decorated surfaces) excluding driveways, parking, and storage areas.
 4. Front yard setbacks and side yard setbacks abutting a street shall be landscaped and maintained. A minimum of 50 percent of the area required to be landscaped shall consist of live plants and/or grass. Driveways shall comply with Section 1664.090(A) (Parking in residential zoning districts—Front and street side setback areas).
 5. Sidewalks providing pedestrian access shall be considered in the design of all landscaped areas, including the need to locate plants so as not to interfere with the ability of pedestrians to have an adequate view of paths and surrounding areas to ensure their safety.
 6. Landscape planting shall be provided within adjacent public street rights-of-way, in compliance with Chapter [16.72](#) (Public Improvements).
 7. Landscaping over 30 inches in height shall not be allowed within a traffic sight area formed by the intersection of public rights-of-way, parking lot entrances and exits, pedestrian rights-of-way, driveways, or alleys as determined by the City Engineer in compliance with Section [16.36.140](#) (Traffic sight area).
- B. **Plant Materials.** Plant materials shall be selected and installed to comply with the following requirements:
1. A mix of plant materials should be provided.
 2. Trees and shrubs shall be planted so that at maturity they do not interfere with service lines and traffic sight areas.
 3. Trees and shrubs shall be planted and maintained in a manner that protects the basic rights of adjacent property owners, particularly the right to solar access.
 4. Trees planted near public sidewalks or curbs shall be of a species and installed in a manner that prevents physical damage to sidewalks, curbs, gutters and other public improvements.
 5. The selection of plant materials shall include both evergreen and deciduous trees, shrubs and attractive erosion preventing ground cover. Seventy-five percent of the plants selected in non-turf areas shall be well suited to the climate of the region and require minimal water once established in the landscape. Plants that require similar water needs should be grouped together and shall be irrigated separately. Attention shall be given to appearance, height, spread, growth rate, moisture requirements, potential root damage, disease, pest susceptibility, climate adaptability, soil type slope, function, and decreased maintenance.
 6. A minimum of three (3) inches of mulch shall be added in non-turf areas to the soil surface after planting. Plant types that are intolerant to mulch shall be excluded from this requirement.
- C. **Compliance with State Model Water Efficient Landscape Ordinance.** For any new building permit, new landscaping installed shall be done so in compliance with the current version of the Water Efficient Landscape Ordinance, as adopted by the City Council at the time of building permit issuance. (Ord. 011-11 C.S. § 1, eff. 10-27-11; prior code § 16-335.040)

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Appendix M

Adoption Resolutions

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STOCKTON CITY COUNCIL

RESOLUTION APPROVING AND ADOPTING THE 2020 URBAN WATER MANAGEMENT PLAN

On March 24, 2020, the City of Stockton (City) entered into an agreement for Professional Services with West Yost Associates to prepare the 2020 Urban Water Management Plan (2020 UWMP); and

The Urban Water Management Planning Act (Water Code, Div. 6, Pt. 2.6, §§ 10610 through 10657) requires urban water suppliers providing over 3,000 acre-feet of water annually or serving 3,000 or more connections to prepare and submit a UWMP to the California Department of Water Resources (DWR) every five years; and

UWMPs are intended to provide a guide to manage urban water demands efficiently and to provide long-term water resource planning to ensure adequate and reliable water supplies over a 20-year planning horizon considering normal, dry, and multiple dry years; and

A UWMP is necessary for water agencies to be eligible for State water management grants and loans; and

As part of the UWMP, the Water Conservation Act of 2009 (Senate Bill X7-7) calls for a statewide per capita water use reduction of 20 percent by 2020 and requires water agencies to determine their baseline water use, an interim water use target, and a compliance water use target using methodologies identified by the DWR; and

Using the methodology provided by the DWR, the 2015 water use target of 172 gallons per capita per day and the 2020 water use target of 165 gallons per capita per day must be achieved; and

The City's actual 2015 gallons per capita per day of 130 and the 2020 gallons per capital per day of 158 achieved the targets; and

The City is committed to implementing and adjusting the Demand Management Measures and water conservation measures identified in the 2020 UWMP to help achieve both the interim and compliance water use targets based on available resources; the financial impact and commitment for which will be evaluated as part of the annual budget process; and

In accordance with the California Water Code and other applicable laws, a 60-day notice was provided to all applicable agencies on June 15, 2020; the 2020 Plan was made available for public inspection prior to consideration for adoption, and notice of the time and place of the public hearing was provided in the Stockton Record on May 17, 2021 and May 24, 2021; and

Section 10652 of the California Water Code provides that the California Environmental Quality Act (Division 13 (commencing with § 21000) of the Public Resources Code) (CEQA) does not apply to the preparation and adoption of an UWMP; and

The 2020 UWMP complies with the requirements of the Urban Water Management Planning Act; now, therefore,

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF STOCKTON, AS FOLLOWS:

1. The City Council approves and adopts the 2020 Urban Water Management Plan in accordance with the California Water Code and authorizes its transmittal to the California Department of Water Resources, a copy of which is attached as Exhibit 1 and incorporated by this reference.

2. The City Council finds and determines that adoption of the 2020 UWMP is not subject to CEQA pursuant to Water Code section 10652 because CEQA does not apply to the preparation and adoption, including addenda thereto, of an urban water management plan or to the implementation of the actions taken pursuant to such plans. Because this resolution comprises the City's adoption of its 2020 UWMP and involves its implementation, no CEQA review is required.

3. Pursuant to CEQA, the City Council directs staff to file a Notice of Exemption with the Clerk's office within five (5) working days of adoption of this resolution.

4. The document and materials that constitute the record of proceedings on which this resolution and the above findings have been based are located at 425 N. El Dorado Street, Stockton, CA 95202. The custodian for these records is the City Clerk.

5. The City Manager is hereby authorized and directed to take all necessary actions to carry out the purpose and intent of this resolution and to incorporate any necessary amendments as stipulated by the State Department of Water Resources.

PASSED, APPROVED, and ADOPTED June 8, 2021.



KEVIN J. LINCOLN II
Mayor of the City of Stockton

ATTEST:



ELIZA R. GARZA, OMC
City Clerk of the City of Stockton



Resolution No. **2021-06-08-1601-02**

STOCKTON CITY COUNCIL

RESOLUTION APPROVING AND ADOPTING THE WATER SHORTAGE CONTINGENCY PLAN

On March 24, 2020, the City of Stockton (City) entered into an agreement for Professional Services with West Yost Associates to prepare the 2020 Urban Water Management Plan (2020 UWMP); and

The Urban Water Management Planning Act (Water Code, Div. 6, Pt. 2.6, §§ 10610 through 10657) requires urban water suppliers providing over 3,000 acre-feet of water annually or serving 3,000 or more connections to prepare and submit a UWMP to the California Department of Water Resources every five years; and

The development of UWMPs includes adopting the Water Shortage Contingency Plan (WSCP); and

The WSCP describes the City's strategic plan in preparation for and responses to water shortages with a goal to proactively prevent catastrophic service disruptions; and

The 2018 Water Conservation Legislation set new requirements for water shortage contingency planning; and

The City's WSCP has been updated so that it is consistent with the 2018 Water Conservation Legislation requirements; and

The City plans to modify SMC Chapter 13.28 and SMC Chapter 13.32 in the future to support these updates; and

In accordance with the California Water Code and other applicable laws, a 60-day notice was provided to all applicable agencies on February 17, 2021, the WSCP was made available for public inspection prior to consideration for adoption, and notice of the time and place of the public hearing was provided in the Stockton Record on May 17, 2021 and May 24, 2021; and

Section 10652 of the California Water Code provides that the California Environmental Quality Act (Division 13 — commencing with § 21000 — of the Public Resources Code) (CEQA) does not apply to the preparation and adoption of a WSCP as part of Plan pursuant to California Water Code section 10632; and

The UWMP and WSCP comply with the requirements of the Urban Water Management Planning Act; now, therefore,

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF STOCKTON, AS FOLLOWS:

1. The City Council approves and adopts the Water Shortage Contingency Plan in accordance with the California Water Code and authorizes its transmittal to the California Department of Water Resources, a copy of which is attached as Exhibit 1 and incorporated by this reference.

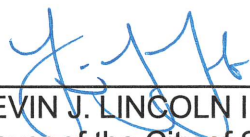
2. Adoption of the Water Shortage Contingency Plan is not subject to CEQA pursuant to Water Code section 10652 because CEQA does not apply to the preparation and adoption of a WSCP or to the implementation of the actions taken pursuant to such plans.

3. Pursuant to CEQA, the City Council directs staff to file a Notice of Exemption with the Clerk's Office within five (5) working days of adoption of this resolution.

4. The document and materials that constitute the record of proceedings on which this resolution and the above findings have been based are located at 425 N. El Dorado Street, Stockton, CA 95202 . The custodian for these records is the City Clerk.


5. The City Manager is hereby authorized and directed to take all necessary actions to carry out the purpose and intent of this resolution and to incorporate any necessary amendments as stipulated by the State Department of Water Resources.

PASSED, APPROVED, and ADOPTED June 8, 2021.



KEVIN J. LINCOLN II
Mayor of the City of Stockton

ATTEST:



ELIZA R. GARZA, CMC
City Clerk of the City of Stockton

